Dtsch. Entomol. Z. 72 (2) 2025, 525–555 | DOI 10.3897/dez.72.158689

PENSOFT

für Natur MUSEUM FÜR NATURKUNDE BERLIN

Taxonomy of *Homoeusa* Kraatz, 1856 (Coleoptera, Staphylinidae, Aleocharinae) from the East Palearctic: II. Revision of Japanese species

Tsubasa Nozaki[1,2], Munetoshi Maruyama[2]

1 *Entomological Laboratory, Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, Fukuoka 819-0395, Japan*

2 *The Kyushu University Museum, Fukuoka 812-8581, Japan*

https://zoobank.org/0F162CF0-9B4E-476B-A832-91BBCCD00D6A

Corresponding author:Tsubasa Nozaki (dosanko.lathrobium@gmail.com)

Academic editor: Emmanuel A. Varela ♦ **Received** 12 May 2025 ♦ **Accepted** 9 October 2025 ♦ **Published** 3 December 2025

Abstract

Members of the myrmecophilous rove beetle genus *Homoeusa* Kraatz, 1856 are symbiotically associated with ants of the genus *Lasius* Fabricius, 1804 with a high degree of host specificity, making them biologically intriguing subjects for studying myrmecophily and host–parasite interactions. Their identification, however, remains challenging. Diagnostic characteristics, particularly the genitalia, have not been well documented for the three previously described species of the genus from Japan, and the presence of undescribed species has been suggested. In this study, we revise the taxonomy of Japanese *Homoeusa*, providing detailed descriptions and illustrations of seven species, including three new species: *Homoeusa translucida* **sp. nov.**, *Homoeusa brevitarsis* **sp. nov.**, and *Homoeusa gigantea* **sp. nov.** Additionally, we present ecological information for each species and discuss their interactions with their host ants.

Key Words

Aleocharine, description, Dinardina, inquiline, *Lasius*, myrmecophily, new species, rove beetles

Introduction

The genus *Homoeusa* Kraatz, 1856 is a myrmecophilous rove beetle group associated with *Lasius* Fabricius, 1804 ants (subfamily Formicinae, tribe Lasiini). Currently, this genus comprises 12 species that are distributed across the Holarctic region (Nozaki and Maruyama 2022a). This series of papers aims to revise the species-level taxonomy of the genus in the East Palearctic region, with a particular focus on the fauna of East Asia and the Russian Far East. The present paper focuses on the Japanese members of this genus.

To date, six species are known from Japan. Of these, four were described by David Sharp based on specimens collected by George Lewis (Sharp 1874, 1888). Subsequently, Sawada (1970b) described a single species, *H. prolongata* Sawada, 1970. In our previous paper, we formally verified the combination of *Homoeusa rufescens* (Sharp, 1874) and described one species, *H. ovata* Nozaki & Maruyama, 2022. Detailed descriptions and illustrations of the genitalia are provided for three species: *H. rufescens*, *H. prolongata*, and *H. ovata*. However, this information is not available for the remaining three species.

Through extensive collection efforts and the examination of historical specimens, two previously undescribed species have been discovered (Maruyama et al. 2013). Additionally, a previously unknown species from the Kii Peninsula of Honshu has been identified, further emphasizing the need for comprehensive taxonomic studies in underexplored regions. This paper builds on the legacy of previous studies by revisiting historical specimens and integrating new materials, offering a complete re-evaluation of the Japanese *Homoeusa* species.

The present paper provides redescriptions of four previously known Japanese species and descriptions of three new species. Besides detailed morphological descriptions, this study provides ecological insights into the species of *Homoeusa*. These include geographic distribution, host ant associations, seasonal activity patterns of adults, collection methods, and behaviors observed in the pres-

Copyright *Tsubasa Nozaki & Munetoshi Maruyama*. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

ence of host ant workers. Such ecological observations not only complement taxonomic findings but also contribute to a broader understanding of the interactions between these beetle inquilines and their ant hosts. Finally, we discuss aspects of their life cycle and behavior, highlighting potential adaptive traits that may have evolved in response to their myrmecophilous lifestyles.

Materials and methods

The materials used in this study have been deposited in the following institutions and private collections:

cKam The private collection of Hiromu Kamezawa (Saitama-ken, Japan)
cSch M. Schülke collection, Berlin, Germany (belonging to Museum für Naturkunde, Berlin, Germany)
EUMJ Ehime University Museum, Japan (H. Yoshitomi)
HUM The Hokkaido University Museum, Sapporo (M. Ôhara)
IPMM Iwate Prefectural Museum, Morioka, Japan (S. Watanabe)
KPMNH Kanagawa Prefectural Museum of Natural History (K. Watanabe)
KUM The Kyushu University Museum (M. Maruyama)
NHM The Natural History Museum, London (K. Matsumoto)
NHMW The Natural History Museum Vienna (M. Seidel)
NSMT National Museum of Nature and Science, Tsukuba (S. Nomura)
OUAVM The Laboratory of Entomology, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan
SCM Sagamihara City Museum, Kanagawa, Japan (S. Shimamoto)
SPMN Museum of Natural and Environmental History, Shizuoka (T. Kishimoto)
TUA Laboratory of Entomology, Faculty of Agriculture, Tokyo, University of Agriculture, Kanagawa, Japan (T. Ishikawa)

The morphological observations were made using an Olympus SZX12 stereomicroscope. For measurements, 5–15 photographs per specimen were captured using a Canon EOS Kiss X5 camera mounted on the Olympus SZX12 stereomicroscope, and the following parts were measured using ImageJ 1.54g.

BL approximate body length
AL antennal length
HW head width
PL pronotal length
PW pronotal width
EL elytral length (sutural length from apex of scutellum to posterior margin of elytra)
EW elytral width
HTL hind tibial length

For the dissection and preparation of permanent slides, Maruyama (2004) was referenced. Habitus photographs were taken with a Canon 7D camera, Canon MP-E 65 mm f/2.8 1–5X macro lens, and Neewer TT560/1Y strobe. The images were stacked using ZERENE STACKER ver. 1.04 (Zerene Systems, LLC). The dissected parts were drawn using a Nikon Eclipse Ci microscope with an Olympus drawing tube attached with a Nikon Y-IDT and imaged using a Canon Eos Kiss X8i mounted on an Olympus BX50 microscope.

The terminology of the internal structure of the male aedeagus follows the description of *H. prolongata* (Sawada 1970b), and that of the spermatheca follows Maruyama (2006), as shown in Fig. 1A, B, respectively. A distribution map was constructed using QGIS 3.34 Prizren.

Host ant workers collected with the *Homoeusa* species were mostly identified by MM and F. Ito, and some by TN, K. Kinomura, and Y. Hisasue. Based on the scientific names of *Lasius* ants, we followed Bolton (1995), Radchenko (2005), and Boudinot et al. (2022), who referred to species groups as in Nozaki and Maruyama (2022a). The identified symbiotic host species and relevant data are as follows.

Lasius fuliginosus group
LFN *Lasius nipponensis* Forel, 1912
LFcfF *Lasius* cf. *fuliginosus*
LFM *Lasius morishitai* Yamauchi, 1979
LFS *Lasius spathepus* Wheeler, 1910
LFO *Lasius orientalis* Karavaiev, 1912
Lasius niger species group
LNH *Lasius hayashi* Yamauchi & Hayashida, 1970
LNJ *Lasius japonicus* Santschi, 1941
LNP *Lasius productus* Wilson, 1955
LNS *Lasius sakagamii* Yamauchi & Hayashida, 1970
Lasius umbratus group
LUM *Lasius meridionalis* (Bondroit, 1920)
LUU *Lasius umbratus* (Nylander, 1846)

In addition to collections by MM, newly collected *Homoeusa* specimens by TN from 2021 to 2024 were included. Collection methods usually involved picking the insects from foraging trails or nests under stones. Shifting litter around foraging trails or destroying nests in decayed wood was also adopted. TN frequently set bait near foraging trails/nests in the litter or soil and under stones. If successful, it resulted in a small swarm of worker ants (Fig. 1C), and *Homoeusa* adults could be collected by shifting such clusters. Some specimens were collected using flight intercept traps (FIT) and a malaise trap.

Behavioral observations were conducted at their habitat outdoors and at the laboratory or accommodations just after collecting (mentioned as “indoors” or “indoor observation”). Videos were recorded using

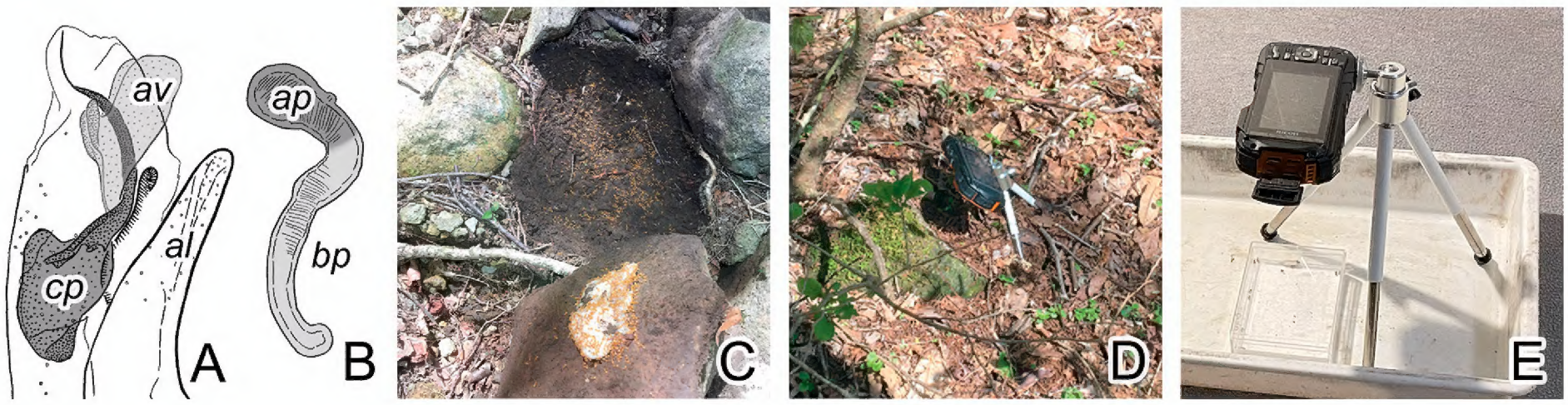

Figure 1. Explanations on research methods. **A.** Terminology of aedeagal median lobe (*Homoeusa prolongata*); al – apical lobe; av – apical valves; cp – copulatory piece; **B.** Terminology of spermatheca (*Homoeusa laevigata*); ap – apical part; bp – basal part; **C.** A simple bait trap set under stone with a swarm of *Lasius meridionalis*; **D.** A small camera shooting video of a *Lasius fuliginosus* group sp. foraging trail; **E.** Indoor observation setup using a plastic container with plaster.

a Camera Ricoh WG5, which was set in front of the foraging trails outside (Fig. 1D) or indoors in plastic containers with plaster (Fig. 1E). Sometimes during indoor observations, a Nikon Digital Sight DS-Fil camera attached to a microscope Leica S8APO was also used. Still images were captured from the videos using Adobe Premiere Elements 2025.

All figures were edited and combined with Photoshop Elements 2025.

Results

Tribe Oxypodini Thomson, 1859
Subtribe Dinardina Mulsant & Rey, 1873

Genus *Homoeusa* Kraatz, 1856

Homoeusa Kraatz, 1856: 76.
Myrmobiota Casey, 1893: 594.
Soliusa Casey, 1900: 53

Note. See Nozaki and Maruyama (2022a) for a detailed synonymic list and the diagnosis of this genus.

Remarks. No apparent sexual dimorphism other than in the genitalia or terminalia has been reported in this genus. However, based on extensive examination of several species, females were often found to have shorter and denser stout setae on the middle posterior margin of the 8th sternite than males did (Fig. 9F, G). Moreover, there are more or less interspecific variation in the marginal shape of the 8th sternite on each sex. Therefore, we provide illustrations and descriptions of this characteristic for all the species, including the well-described species in our previous papers (Nozaki and Maruyama 2022a, 2022b), *Homoeusa rufescens* and *H. ovata*.

To measure the antennae, we provided the width and aspect ratio of each segment in the previous paper. However, they usually have elliptical cross-sections, which can cause instability during measurement. Therefore, we provided the relative length of each segment instead.

The males have various parameral apical lobe shapes and arrangements of the four setae across species. Although strict homology is not available for these four setae, for the convenience of a comparative description, we named them as Sawada (1970b) did for *H. prolongata*. Each seta typically has the following characteristics in *Homoeusa* (e.g., Fig. 13H): *a*, longest and distributed at the most basal position; *b*, medium in length and distributed dorsally; *c*, medium in length and distributed ventrally; *d*, shortest, thinnest, and distributed at the most apical position.

Key to species of *Homoeusa* in Japan

1 Pronotum strongly transverse, 1.84–2.05 as wide as long (Fig. 4B); pronotum and elytra sparsely covered with modified stout setae (Fig. 4C) ..... *Homoeusa translucida* sp. nov.
– Pronotum moderately transverse, 1.38–1.80 times as wide as long (e.g., Fig. 7B); pronotum and elytra moderately densely covered with normal setae (e.g., Fig. 7B, C) 2
2 Metatarsus shorter than half of the metatibia (Fig. 17F, G) ..... *Homoeusa brevitarsis* sp. nov.
– Metatarsus longer than half of the metatibia (Fig. 3E) 3
3 Antennal segment 10th more transverse (e.g., Fig. 13A) 4
– Antennal segment 10th less transverse (Fig. 9A, B) 6
4 Pronotum weekly transverse (PW/PL, 1.38–1.49); median lobe of aedeagus having round flattened projection on ventral side (fig. 12 in Nozaki and Maruyama 2022a) ..... *Homoeusa rufescens* (Sharp, 1874)
– Pronotum strongly transverse (PW/PL, 1.54–1.68); median lobe of aedeagus without round flattened projection on ventral side 5

5 Metaventral process distinctly produced (fig. 22 in Nozaki and Maruyama 2022a); median lobe of aedeagus, apical lobe s-shaped in lateral view with small lanceolate flattened projection on ventral side (fig. 23 in Nozaki and Maruyama 2022a)..... *Homoeusa ovata* Nozaki & Maruyama, 2022

– Metaventral process slightly or indistinctly produced (e.g., Fig. 13D); median lobe of aedeagus, apical lobe not s-shaped without flattened projection..... *Homoeusa prolongata* Sawada, 1970b

6 Postero-lateral angle of pronotum acute (e.g., Fig. 15B); metaventral process slightly or indistinctly produced (e.g., Fig. 15D)..... 7

– Postero-lateral angle of pronotum obtuse or around 90 degrees (e.g., Fig. 9C); metaventral process distinctly produced (e.g., Fig. 9E)..... 8

7 Pronotum and elytra covered with long setae (Fig. 15B, C); elytral postero-lateral notch deep (Fig. 15B); mesocoxal cavities almost separated (Fig. 15D)..... *Homoeusa gigantea* sp. nov.

– Pronotum and elytra covered with distinctly shortened setae (Fig. 7B, C); elytral postero-lateral notch shallow (Fig. 7B); mesoventral process reaching only middle of mesocoxal cavities (Fig. 7D)..... *Homoeusa laevigata* Sharp, 1888

8 Apical lobe of paramere moderately long (Fig. 9I, J), length about half of whole paramere, apex simply round..... *Homoeusa japonica* Sharp, 1874

– Apical lobe of paramere extremely long (Fig. 11I), length a little over half of whole paramere, apex blade-shaped..... *Homoeusa longicornis* Sharp, 1888

Homoeusa translucida Nozaki & Maruyama, sp. nov.

https://zoobank.org/B3ED5737-79D9-4A24-B513-344F726D937B

Figs 3A, 4A–I, 5A, B

Japanese name: Sukashi-hirata-ariyadori

"*Homoeusa* sp.4": Saitoh et al. 2017: 33, fig. 65 (recorded from Kanagawa-ken).

"Oxypodini? sp.2": Nishida 2019: 135, fig. 11 (recorded from Saga-ken).

Material examined. ***Holotype*** (Fig. 1A) • ♂; "Mt. Minoyama, Minano," / "Saitama, Japan, alt. 500-" / "560 m; MC: 5439-00-69." / "21.V.1999 M. UCHIDA" (KUM). ***Paratypes.*** **Japan: Hokkaido** • 1♀; Nopporo Forest Park, Sapporo-shi; 24.V. & 5.VI.2008; Tomáš Lackner leg. (NHMW). **Honshu: Kanagawa-ken** • 1 ex.; Yakunimi-yama, Hadano-shi; 10.V.2013; O. Saitoh leg. (KPMNH) • 1♀; same locality; 24.V.2014; O. Saitoh leg. FIT (KPMNH) • 1♂; same locality; 8.VI.2014; O. Saitoh leg. FIT (KPMNH). **Shimane-ken** • 1 ex.; Urahikimi, Masuda-shi; 6.VI.1998; S. Nomura leg. (KUM). **Okayama-ken** • 1 ex.; Nagi-yama, Nagi-chô; 17.V.2005; W. Suzuki leg. (KUM). **Shikoku: Ehime-ken** • 1 ex.; Mt. Sara-ga-mine, Toon-shi; 13.VII.2008; Y. Yamauchi leg. (EUMJ). **Kochi-ken** • 1 ex.; Kajigamori, Ôtoyo-chô; 20.V.1951; M. Miyamoto leg. (EUMJ). **Kyushu: Fukuoka-ken** • 1 ex.; Takasubaru, Mt. Hikosan [33.4883, 130.9174], Soeda-machi; 27.VI.2021; TS. (Tsubasa) Nozaki leg. LUM (KUM) • 1 ex.; Bio. lab. KU. Mt. Hikosan, Soeda-machi; 28.III–27.IV.2023; J. Abe leg. Malaise trap (KUM). **Saga-ken** • 1♂; Mt. Seira, Imari-shi; 28.V.1984; S. Nomura leg. (KUM) • 1♂; Kurokami-yama, Arita-cho; 18.V.2018; M. Nishida leg. FIT (KUM).

Diagnosis. This species can be easily distinguished from the other species of the genus by the following combination of characteristics: body color yellowish orange; pronotum strongly transverse (PW/PL, 1.84–2.05), postero-lateral angle distinctly acute (Fig. 4B); metaventral process weakly produced (Fig. 4D); pronotum and elytra sparsely covered with modified stout setae (Fig. 4B, C); median lobe of aedeagus apical lobe straight, apex round and slightly humped in lateral view, apical valves very large and cheliform (Fig. 4G); spermatheca (Fig. 4I) L-shaped, basal part very long. This species is slightly similar to *H. gigantea* sp. nov. in color but differs in its pronotal and setal shapes.

Description. ***Body*** (Figs 3A, 5B) small, broad; dorsal surface mostly polished.

Head large; color yellowish orange; eyes large. Antennae (Fig. 4A) long; relative length of each antennal segment from first to 11th, 2.48: 1.96: 1.39: 1.22: 1.04: 1.09: 1.00: 1.15: 1.15: 1.37: 3.26.

Thorax. Pronotum (Fig. 4B) subrectangular, strongly transverse (PW/PL, 1.84–2.05), widest near middle, postero-lateral angle distinctly acute, posterior margin distinctly sinuate, color yellowish orange, subtransparent, surface sparsely covered with modified stout setae and punctures, gently polished without reticulation. Elytra (Fig. 4B, C) slightly widened posteriad, widest at middle, then narrowed roundly, posterior margins shallowly notched near lateral corners, color yellowish orange, subtransparent, surface sparsely covered with modified stout setae and punctures, gently polished without reticulation. Hind wings developed. Mesoventral process (Fig. 4D) narrow, with weak medial carina, apex gently pointed, reaching posterior 1/3 of mesocoxal cavities, Metaventral process weakly produced.

Abdomen elongate, narrowed posteriad; surface sparsely covered with short setae and each posterior margin with long stout setae; covered with fine vertical furrows.

Male: 8th sternite (Fig. 4E) widely protruding at middle of posterior margin; median lobe of aedeagus (Fig. 4G) elongate, length about 0.57 mm, apical lobe straight, apex round and slightly humped in lateral view, apical valves large and cheliform, dorsal arms boot-shaped; basal part of copulatory piece very large and having claw-shaped projection, basal corner acutely pointed. Paramere (Fig. 4H) length about 0.59 mm; apical lobe of paramere long, length over 1/3 of whole paramere, curved ventrally, slightly dilated apicad; four setae, c located a little more apically than b; velum narrow and membranous.

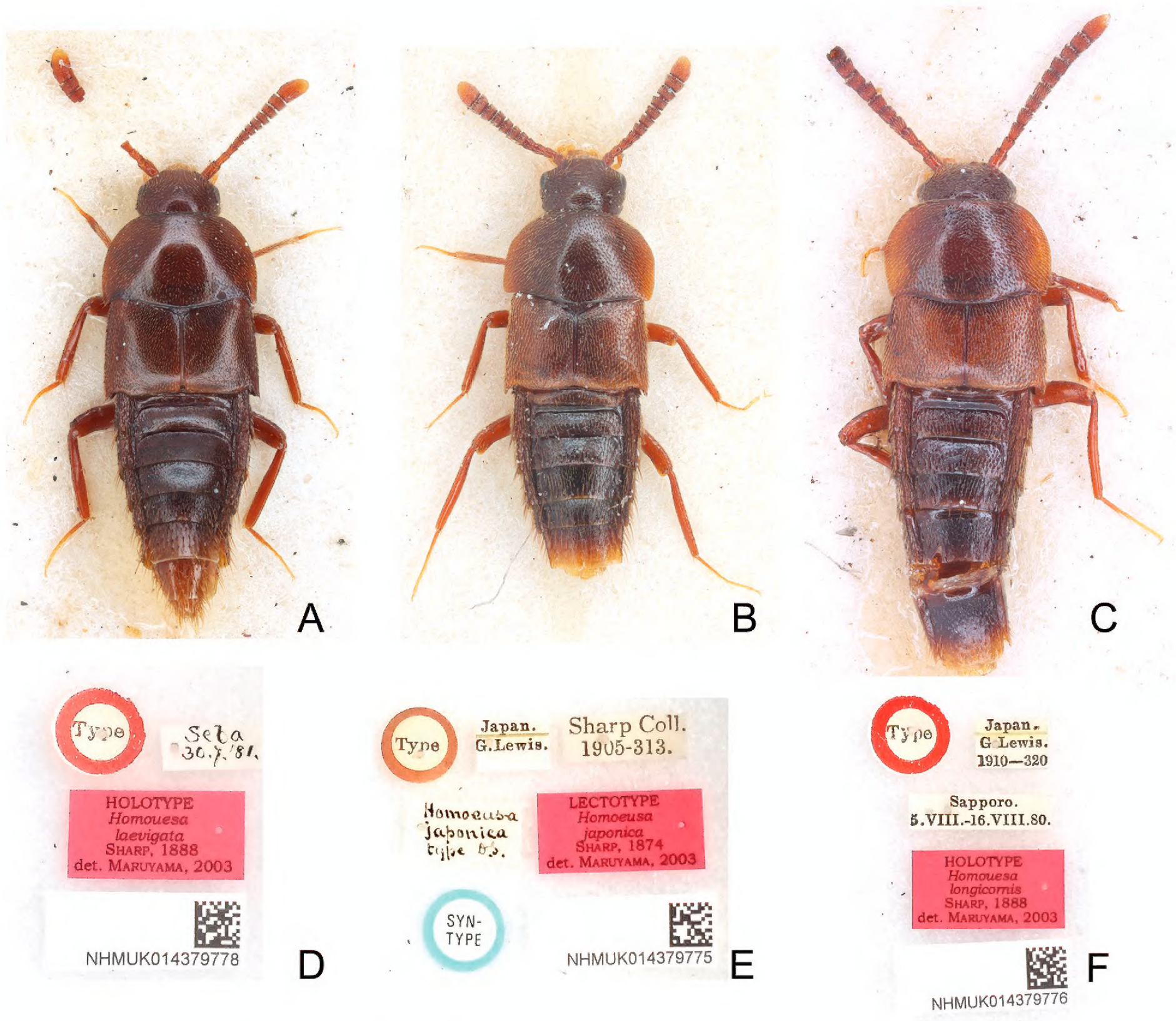

Figure 2. Type materials deposited in NHM. **A–C.** The habiti of the type specimens of three species; **A.** The holotype of *Homoeusa laevigata* Sharp, 1888, male; **B.** The lectotype of *Homoeusa japonica* Sharp, 1874, male; **C.** The holotype of *Homoeusa longicornis* Sharp, 1888, male; **D, E.** The labels pinned with each specimen (all photographed by Keita Matsumoto).

Female: 8th sternite (Fig. 4F) slightly protruding at the middle of posterior margin; spermatheca (Fig. 4I) L-shaped, basal part very long, apex of basal part not swollen, base almost straight and only slightly swollen.

Measurements (in mm) and ratios. Body parts (N = 10): BL ≈ 2.13–2.91; AL, 0.93–1.07; HW, 0.51–0.57; PL, 0.5–0.59; PW, 1–1.13; EL, 0.47–0.52; EW, 0.98–1.16; HTL, 0.69–0.76; PW/PL, 1.84–2.05; AL/PL, 1.69–1.95; HTL/PL, 1.29–1.46.

Distribution. Japan (Honshu, Shikoku, Kyushu) (Fig. 5A).

Symbiotic hosts. *Lasius umbratus* species group: *L. meridionalis* (only single example).

Bionomics. Two individuals were collected by FIT, and a single individual was collected by the malaise trap. The behavior with the host ants is unknown.

Remarks. This species is relatively rare, and most specimens have no information regarding their host ants. However, a single specimen (Fig. 5B) was collected with *L. meridionalis* using a bait trap set by TN under the stone where the ant trail was located.

Etymology. The specific name is derived from the Latin adjective, which means "transparent" and refers to the character of the pronotum of this new species.

Homoeusa rufescens (Sharp, 1874)

Fig. 6A–C, G

(Japanese name: Hoso-hirata-ariyadori)

Thiasophila rufescens Sharp, 1874: 5; Fenyes 1919: 393 (catalogue); Bernhauer and Scheerpeltz 1926: 771 (catalogue); Smetana 2004: 488 (catalogue).

Homoeusa rufescens: Maruyama and Zerche 2014: 17 (mentioning actual generic affiliation); Schülke and Smetana 2015: 682 (catalogue); Nozaki and Maruyama 2022a: 42 (the combination confirmed).

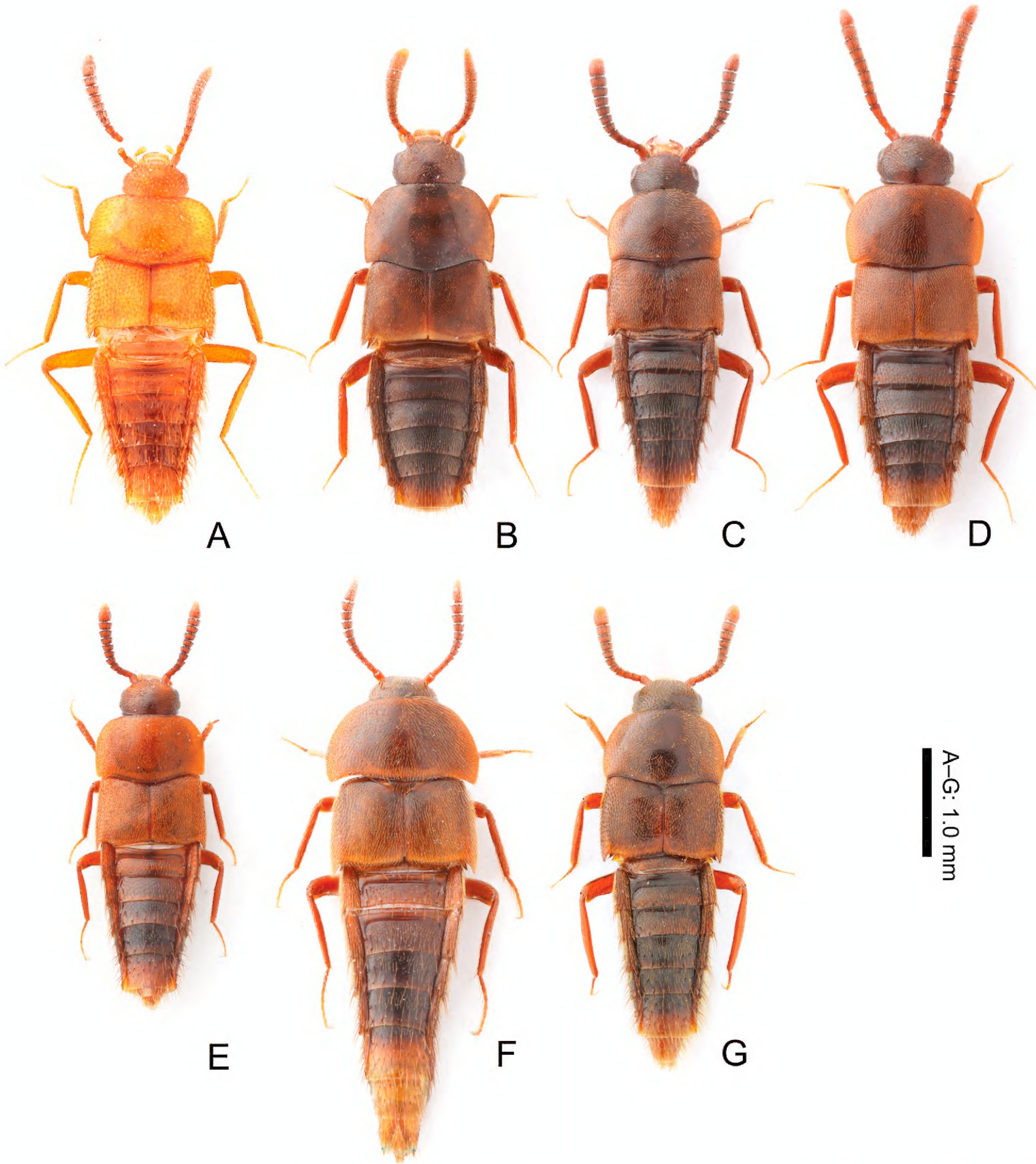

Figure 3. Habiti of Japanese *Homoeusa* spp. **A.** *Homoeusa translucida* sp. nov., holotype, male; **B.** *Homoeusa laevigata* Sharp, 1888, male from Nagano-ken; **C.** *Homoeusa japonica* Sharp, 1874, male from Fukuoka-ken; **D.** *Homoeusa longicornis* Sharp, 1888, male from Hokkaido; **E.** *Homoeusa prolongata* Sawada, 1970b, male from Nagano-ken; **F.** *Homoeusa gigantea* sp. nov., holotype, male; **G.** *Homoeusa brevitarsis* sp. nov., holotype, male.

Additional material. Japan: Honshu: Ibaraki-ken • 2 exs.; Asahi-tôge, Tsuchiura-shi; 8.V.2022; Y. Komatsuzaki leg. (KUM) • 1 ex.; Nagai, Tsuchiura-shi; 27.IV.2022; Y. Komatsuzaki leg. (KUM). **Chiba-ken** • 5 exs.; Shimin-nomori Yachô-no-mori, Toyooka, Futtsu-shi; 10.V.2007; H. Ono leg. (KUM). **Tokyo-to** • 1 ex.; Mt. Takao (alt. 450 m), Hachiôji-shi; 4.VI.2001; M. Maruyama leg. LFS (NHM). **Kanagawa-ken** • 1 ex.; Nonkendainomori, Enkaizan, Yokohama-shi; 3.V.1991; K. Kubo leg. (SPMN). **Nagano-ken** • 2 exs.; Fuji, Satoyamabe, Matsumoto-shi; 21.V.2004; T. Komatsu leg. (KUM) • 1 ex.; Fuji, Satoyamabe, Matsumoto-shi; 9.VI.2004; T. Komatsu leg. (KUM). **Gifu-ken** • 3 exs.; Mitahora, Gifu-shi, 10.VI.2013; K. Kinomura leg. (KUM) • 2 exs.; Hirugano Bunsuirei Park, Gujo-shi; 10.VI.2013; K. Kinomura leg. (KUM). **Shizuoka-ken** • 2 exs.; Kumazaka, Izu-shi,

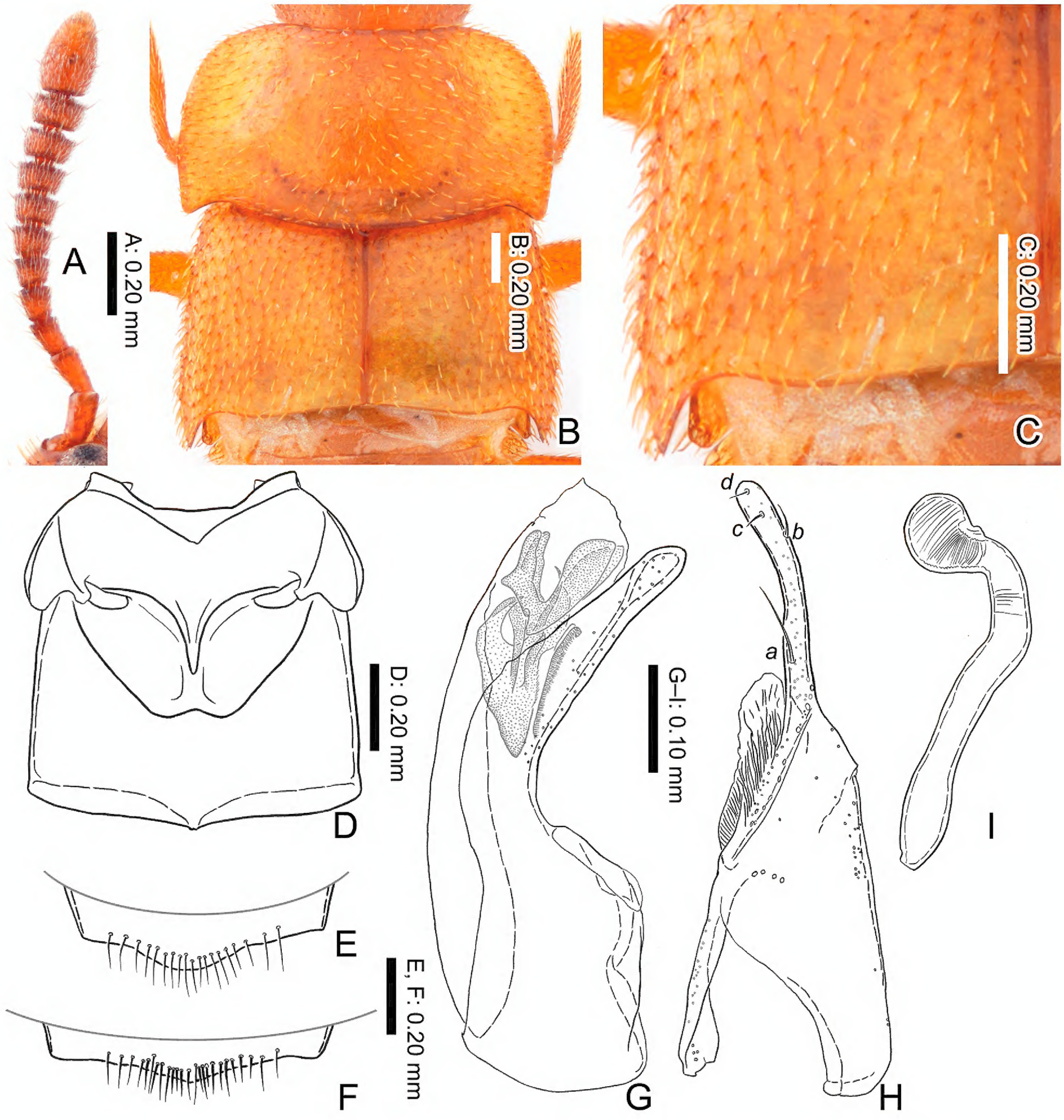

Figure 4. *Homoeusa translucida* sp. nov. **A.** Antenna; **B.** Pronotum and elytra; **C.** Zoomed view of elytron; **D.** Meso- and metaventrite; **E, F.** Posterior margin of 8th sternite; **E.** Male; **F.** Female; **G.** Median lobe of aedeagus from lateral view; **H.** Paramere of aedeagus from lateral view; **I.** Spermatheca.

30.V.2022; T. Tenma leg. (KUM). **Aichi-ken** • 1 ex.; Jôkô-ji-kôen, Seto-shi; 4.V.2023; T. Tenma leg. (KUM). **Osaka-fu** • 3 exs.; Sakurai [34.8828, 135.6525], Shimamoto-chô; 9.V.2021; Y. Takatani leg. LFS (KUM). **Shikoku: Kagawa-ken** • 1 ex.; Shirahige-jinja, Ayagami-chô; 25.IV.2004; H. Fujimoto leg. LFM (KUM). **Kochi-ken** • 2 exs.; Ashizuri-misaki (alt. 120 m) [32.7480, 133.0136], Tosashimizu-shi; 21.V.2024; TS. Nozaki leg. (KUM). **Kyushu: Fukuoka-ken** • 2 exs.; Bio. Exp. Center of Kyushu Univ., Mt. Hikosan, Soeda-machi; 24.IV.2021; N. Tsuji leg. (KUM) • 1♂; Biol. Lab. KU, Hikosan (alt. 750 m), Soeda-machi; 22.V.2011; M. Maruyama & T. Kanao leg. (KUM). **Miyazaki-ken** • 1 ex.; Ômoridake forest road (alt. 600 m) [32.0435, 131.1973], Aya-machi; 12.VI.2024; TS. Nozaki & T. Kinoda leg. LFS (KUM).

Diagnosis. See Nozaki and Maruyama (2022a).

Additional description. Relative length of each antennal segment from first to 11th, 2.27: 1.63: 1.37: 1.27: 1.02: 1.02: 1.00: 1.05: 1.07: 1.44: 3.34. Hind wings developed.

Male. 8th sternite (Fig. 6A) weakly round at posterior margin; four setae of parameral apical lobe (Fig. 6C) normally arranged.

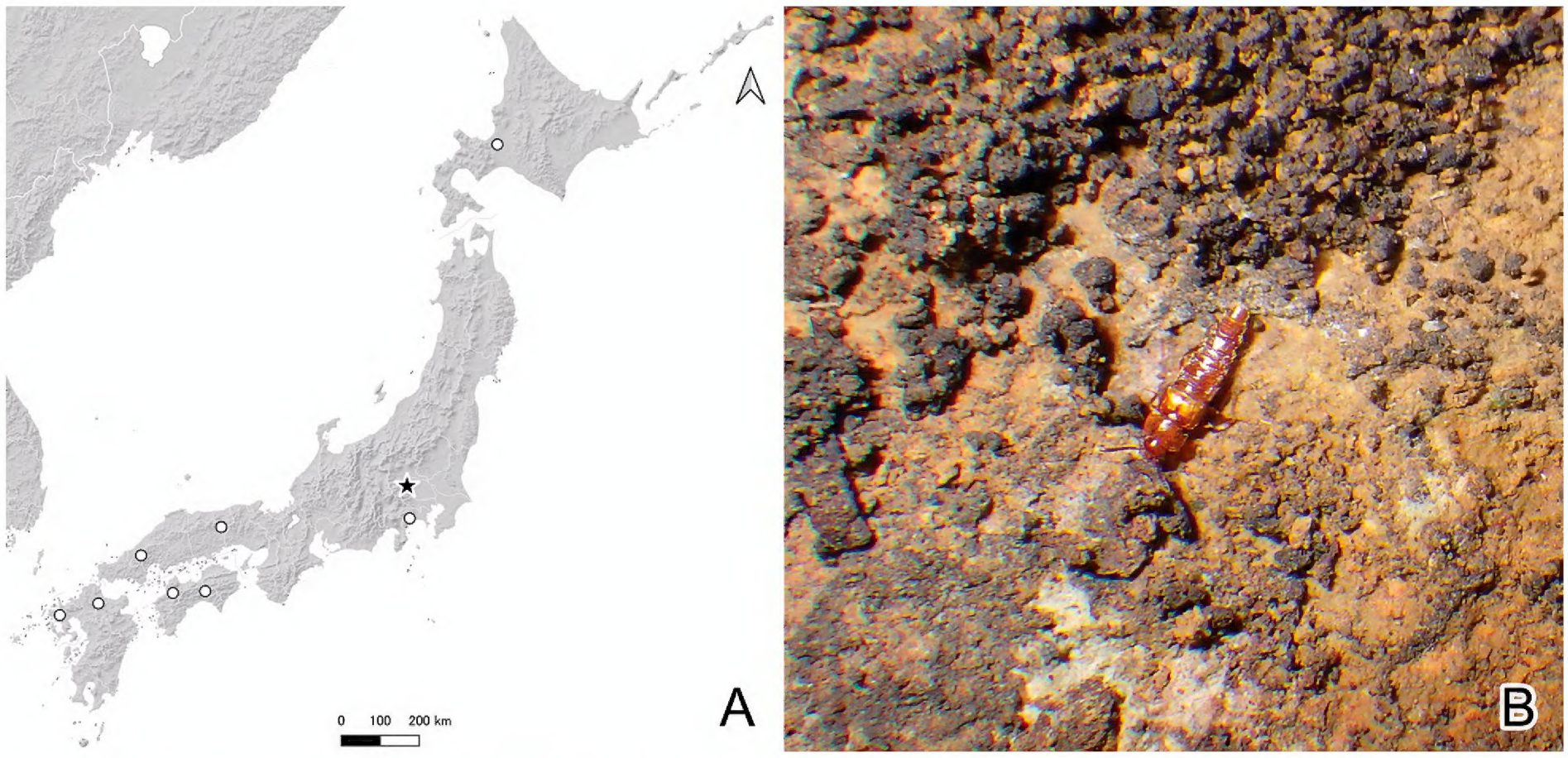

Figure 5. *Homoeusa translucida* sp. nov. **A.** Distribution map; black star – the type locality; white circles – collection data examined in this paper; **B.** A photograph of a living adult collected with *Lasius meridionalis* at Mt. Hikosan, Fukuoka-ken, Kyushu.

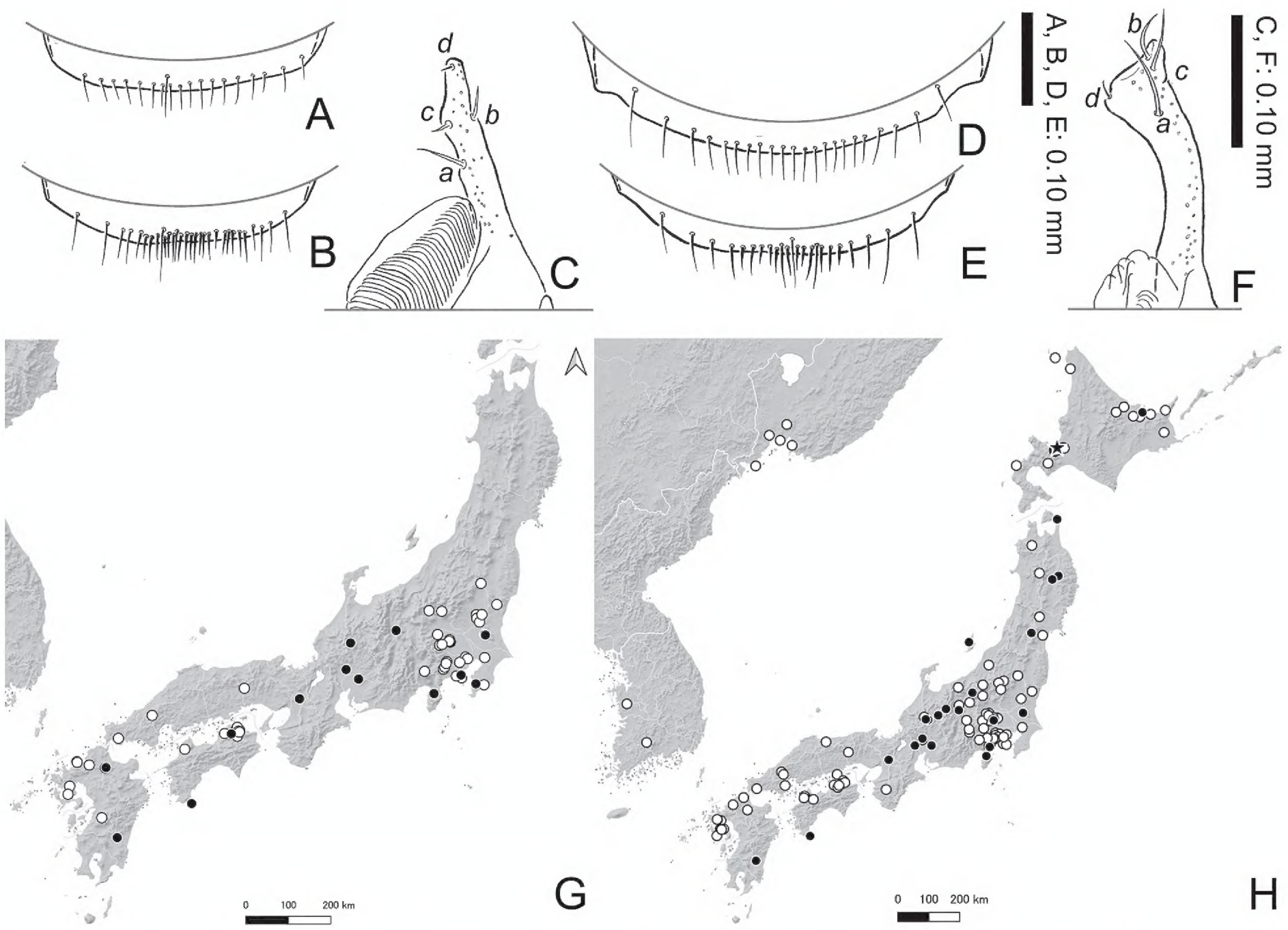

Figure 6. *Homoeusa rufescens* (Sharp, 1874) and *Homoeusa ovata* Nozaki & Maruyama, 2022b. **A–C, G.** *Homoeusa rufescens*; **D–F, H.** *Homoeusa ovata*. **A, B, D, E.** Posterior margin of 8th sternite; **A, D.** Male; **B, E.** Female; **C, F.** Parameral apical lobe (modified from figs 13, 24 in Nozaki and Maruyama 2022a); **G, H.** Distribution map; black star – the type locality; white circles – collection data examined in Nozaki and Maruyama (2022a); black circles – additional data examined in this paper.

Female. 8th sternite (Fig. 6B) gently round at posterior margin.

Distribution. Japan (Honshu, Shikoku, Kyushu) (Fig. 6G).

Symbiotic hosts. *Lasius* cf. *fuliginosus*, *L. morishitai*, *L. nipponensis*, *L. spathepus*.

Homoeusa ovata Nozaki & Maruyama, 2022

Fig. 6D–F, H

(Japanese name: Hime-hirata-ariyadori)

Homoeusa ovata Nozaki and Maruyama 2022b: 1 (provideing depository); Nozaki and Maruyama 2022a: 48 (detailed description but unavailable).

"*Homoeusa* sp.:" Maruyama et al. 2013: 24 (distribution and bionomics mentioned).

Additional material from Japan. Hokkaido • 1 ex.; Mt. Moiwa (alt. 520 m), Sapporo-shi; 27.VII.1991; A. Smetana leg. (NMST, ex A. Smetana coll.) • 5 exs.; Memanbetsu, Ôzora-chô; 7.VIII.2018; Y. Yoshimura leg. LFcfF (KUM). **Honshu: Aomori-ken** • 1 ex.; Yokonagare-tôge (alt. 300 m) [41.264, 141.314], Higashidori-mura; 26.VI.2023; TS. Nozaki leg. (KUM). **Iwate-ken** • 8 exs.; Gandô-ko, Morioka-shi; 9.VI.2019; N. Nakaya leg. LFcfF (IPMM) • 1 ex.; Kitayama-sansakuro, Morioka-shi; 31.VII.2019; N. Nakaya leg. LFcfF (IPMM). **Yamagata-ken** • 1 ex.; Senjuin, Yamadera (alt. 300–320 m) [38.319, 140.448]; Yamagata-shi; 15.VII.2024; K. Mizota leg. LFcfF (KUM). **Ibaraki-ken** • 2 exs.; Asahi-tôge, Tsuchiura-shi; 8.V.2022; Y. Komatsuzaki leg. (KUM). **Saitama-ken** • 1 ex.; Ushidatekubo (alt. 830 m) [35.9685, 139.1793], Tokigawa-machi; 21.V.2023; S.T. (Shota) Inoue & N. Katsube leg. LFcfF (KUM). **Kanagawa-ken** • 1 ex.; Kowakien, Mt. Hakone, Hakone-chô; 22.V.1963; R. Kiryu leg. (SCM) • 1 ex.; Toya, Tsukui, Sagamihara-shi; 11.IV.1976; R. Kiryu leg. (SCM) • 2 exs.; Nanzawa, Tsukui, Sagamihara-shi; 14.IV.1977; R. Kiryu leg. (SCM). **Niigata-ken** • 2 exs.; Sado Daira Ski Resort, Shinbo, Kanai (alt. 390 m) [38.076, 138.350], Sado-shi; 19.VI.2023; TS. Nozaki & W.R. Liang leg. LFN (KUM) • 1 ex.; Sado Daira Ski Resort, Shinbo, Kanai (alt. 380 m) [38.075, 138.350], Sado-shi; 20.VI.2023; TS. Nozaki & W.R. Liang leg. LFO (KUM) • 2 exs.; Sado Daira Ski Resort, Shinbo, Kanai (alt. 380 m) [38.075, 138.355], Sado-shi; 20.VI.2023; TS. Nozaki & W.R. Liang leg. LFcfF (KUM). **Nagano-ken** • 1 ex.; Bôdaira, Shiga-kôgen (alt. 1,160 m) [36.7203, 138.4656], Yamanouchi-machi; 9.VII.2022; TS. Nozaki leg. LFM (KUM) • 2 exs.; Satoyamabe [36.2457, 138.0096], Matsumoto-shi; 12.V.2021; TS. Nozaki leg. LFN (KUM). **Gifu-ken** • 2 exs.; Mt. Kentô, Takayama-shi; 6.VII.2003; K. Kinomura leg. (KUM) • 2 exs.; Bijo Pass, Takayama-shi; 5.VIII.2003; K. Kinomura leg. (KUM) • 1 ex.; Isshiki, Takayama-shi; 23.V.2004; K. Kinomura leg. (KUM) • 1 ex.; Nabedaira-kôgen, Takayama-shi; 30.VI.2013; K. Kinomura leg. (KUM) • 2 exs.; Hirugano Bunsuirei Park, Gujo-shi; 10.VI.2013; K. Kinomura leg. (KUM) • 1 ex.; Yôrô Park, Yôrô-chô; 29.IV.2004; K. Kinomura leg. (KUM) • 2 exs.; Mitahora, Gifu-shi; 10.VI.2013; K. Kinomura leg. (KUM). **Shizuoka-ken** • 2 exs.; Kumazaka, Izu-shi; 30.V.2022; T. Tenma leg. (KUM). **Aichi-fu** • 2 exs.; Jôkôji-kôen, Seto-shi, 4.V.2023; T. Tenma leg. (KUM). **Osaka-fu** • 3 exs.; Sakurai [34.8828, 135.6525], Shimamoto-chô; 9.V.2021; Y. Takatani leg. LFS (KUM). **Shikoku: Kochi-ken** • 1 ex.; Ashizuri-misaki (alt. 120 m) [32.7480, 133.0136], Tosashimizu-shi; 21.V.2024; TS. Nozaki leg. (KUM). **Kyushu: Miyazaki-ken** • 1 ex.; Ômoridake forest road (alt. 600 m) [32.0435, 131.1973], Aya-machi; 12.VI.2024; TS. Nozaki & T. Kinoda leg. LFS (KUM).

Diagnosis. See Nozaki and Maruyama (2022a).

Additional description. Relative length of each antennal segment from first to 11th, 2.31: 1.98: 1.48: 1.29: 1.17: 1.00: 1.14: 1.14: 1.26: 1.4: 3.36. Hindwings developed.

Male. 8th sternite (Fig. 6D) gently round at posterior margin; apical lobe of paramere (Fig. 6F), setae *b* and *c* irregularly distributed at the acute corner on dorsal side.

Female. 8th sternite (Fig. 6E) gently round at posterior margin.

Distribution. Russia (Primorskyi krai), Korea, Japan (Hokkaido, Honshu, Shikoku, Kyushu) (Fig. 6H).

Symbiotic hosts. *Lasius fuji*, *L.* cf. *fuliginosus*, *Lasius morisitai*, *L. nipponensis*, *L. orientalis*, *L. spathepus*.

Homoeusa laevigata Sharp, 1888

Figs 2A, D, 3B, 7A–I, 8A–H

(Japanese name: Tsuya-hirata-ariyadori)

Homoeusa laevigata Sharp, 1888: 283 (original description); Schülke and Smetana 2015; 682 (catalogue); Maruyama et al. 2013: 24 (distribution and bionomics mentioned).

Type material. ***Holotype*** (Fig. 2A, D) • ♂; "Homoeusa" / "laevigata" / "Type" / "D.S." (written on the card which the specimen mounted) // "Seba" / "30.y.'81." // "Type" (red round curator label) // "HOLOTYPE" / "*Homoeusa*" / "*laevigata*" / "SHARP, 1888" / "det. MARUYAMA, 2003" // "NHMUK014379778" (dissected by MM) (NHM).

Additional material examined. Japan: Honshu: Miyagi-ken • 2 exs.; Aoba-yama, Sendai-shi; 10.VII.2004; K. Mizota leg. LFN (KUM) • 3♂♂, 1♀, 7 exs.; same locality; 17.VII.2004 K. Mizota leg. LFN (KUM) • 2♂♂; Aoba Forest Greenery [38.2577, 140.8255], Sendai-shi; 12.VIII.2024; TS. Nozaki leg. LFN (KUM). **Fukushima-ken** • 2♀♀; Kuraizaka-toge, Nishiaizu-machi; 18.VI.2022; K. Haga leg. LFN (KUM) • 1♂; Ueda dam, Kaneyama-machi; 25.VI.2023; K. Haga leg. LFN (KUM). **Ibaraki-ken** • 1♂, 1 ex.; Mt. Yamizo, Daigo-machi; 4.V.2022; Y. Komatsuzaki leg. (KUM). **Saitama-ken** • 1 ex.; Hashidate riv. (alt. 500 m), Chichibu-shi; 17.VII.1999; K. Toyoda leg. LFN (KUM) • 2♂♂, 1♀, 3 exs.; Hashidate, Chichibu-shi; 17.VII.1999; K. Toyoda leg. LFN (KUM) • 2♂♂, 1♀, 12 exs.; same locality;

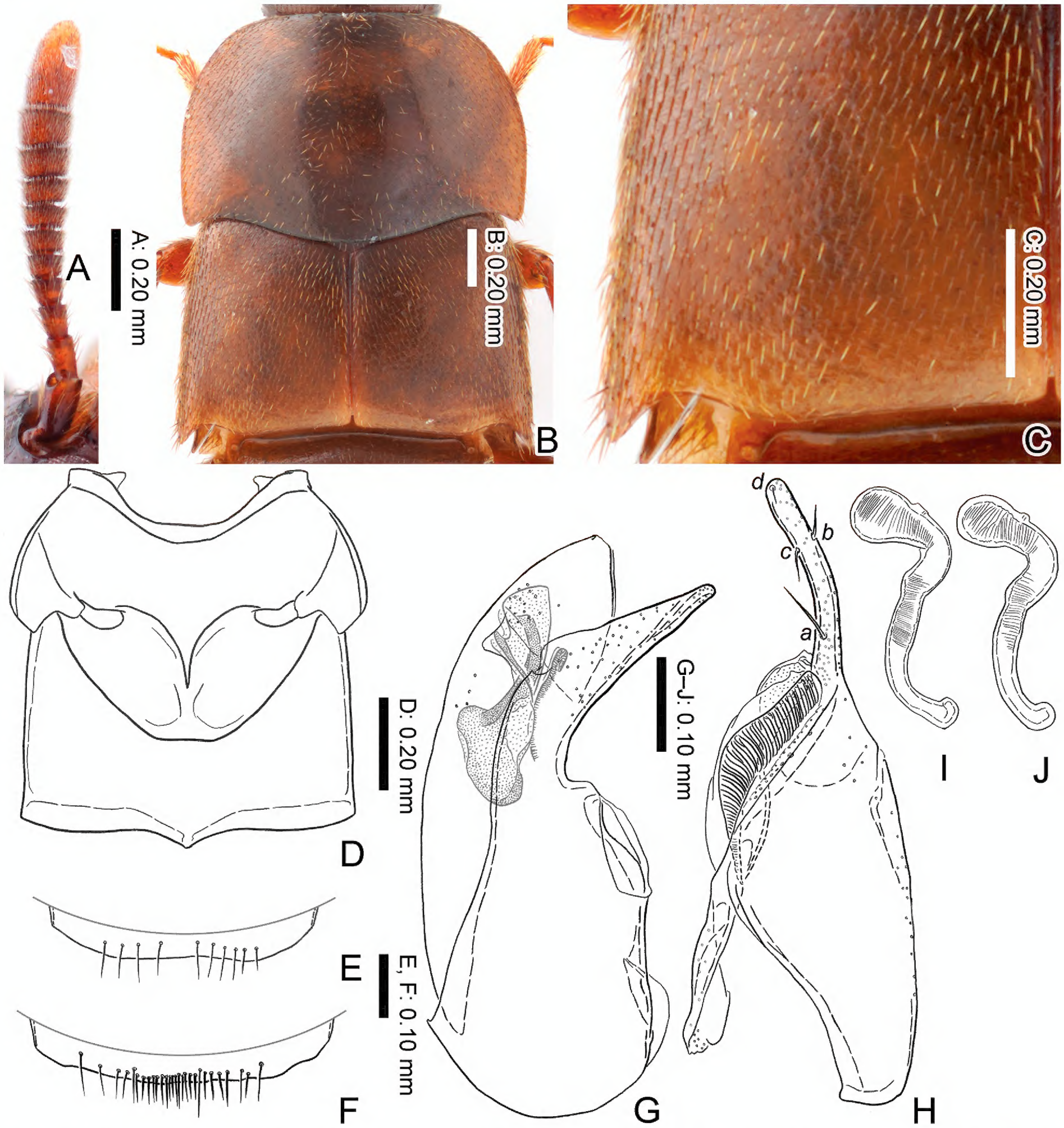

Figure 7. *Homoeusa laevigata* Sharp, 1888. **A.** Antenna; **B.** Pronotum and elytra; **C.** Zoomed view of elytron; **D.** Meso- and metaventrite; **E, F.** Posterior margin of 8th sternite; **E.** Male; **F.** Female; **G.** Median lobe of aedeagus from lateral view; **H.** Paramere of aedeagus from lateral view; **I, J.** Spermatheca.

30.VII.1999; K. Toyoda leg. LFN (KUM) • 1♂, 1 ex.; same locality; 30.VII.2000; (NHM). **Yamanashi-ken** • 2 exs.; Kissawa [35.7219, 138.5376], Kai-shi; 31.V.2025; M. Maruyama leg. LFN (KUM) • 1 ex.; Gozaishi-kôsen (alt. 900 m); Nirasaki-shi; 25.VII.2002; S. Nomura leg. LFN (KUM). **Nagano-ken** • 1♂, 3♀♀, 3 exs.; Mt. Iwatakeyama, Hakuba-mura; 16.VI.2001; T. Watanabe leg. LFN (KUM) • 1♂, 1♀, 6 exs.; Midarebashi, Chikuhoku-mura; 21.VII.1999; T. Watanabe leg. (KUM) • 1 ex.; Shiozawa [36.3268, 138.5983], Karuizawa-machi; 5.VI.2024; K. Goino leg. LFN (KUM) • 1 ex.; Nagakura, Karuizawa-machi; 12.V.2024; S. Sakurai leg. LFN (KUM) • 1♂, 1♀, 5 exs.; Jôyama, Matsumoto-shi; 12–13.VII.1998; M. Maruyama leg. LFN (KUM) • 1♂, 5 exs.; Satoyamabe [36.2457, 138.0096], Matsumoto-shi; 12.V.2021; TS. Nozaki leg. LFN (KUM) • 1 ex.; same locality; 30.VII.2021 TS. Nozaki leg. LFN (KUM) • 1 ex.; Kamimaki [35.85, 137.98], Ina-shi; 1–4.VII.2021; T. Hashizume leg. LFN (KUM) • 1 ex.; same locality 26.VI.2022; I. Hashizume leg. (KUM).

Diagnosis. This species is distinguished from other species of the genus by the following combination of characteristics: body blackish, polished; pronotal postero-lateral angle acute (Fig. 7B, C); elytra distinctly widened

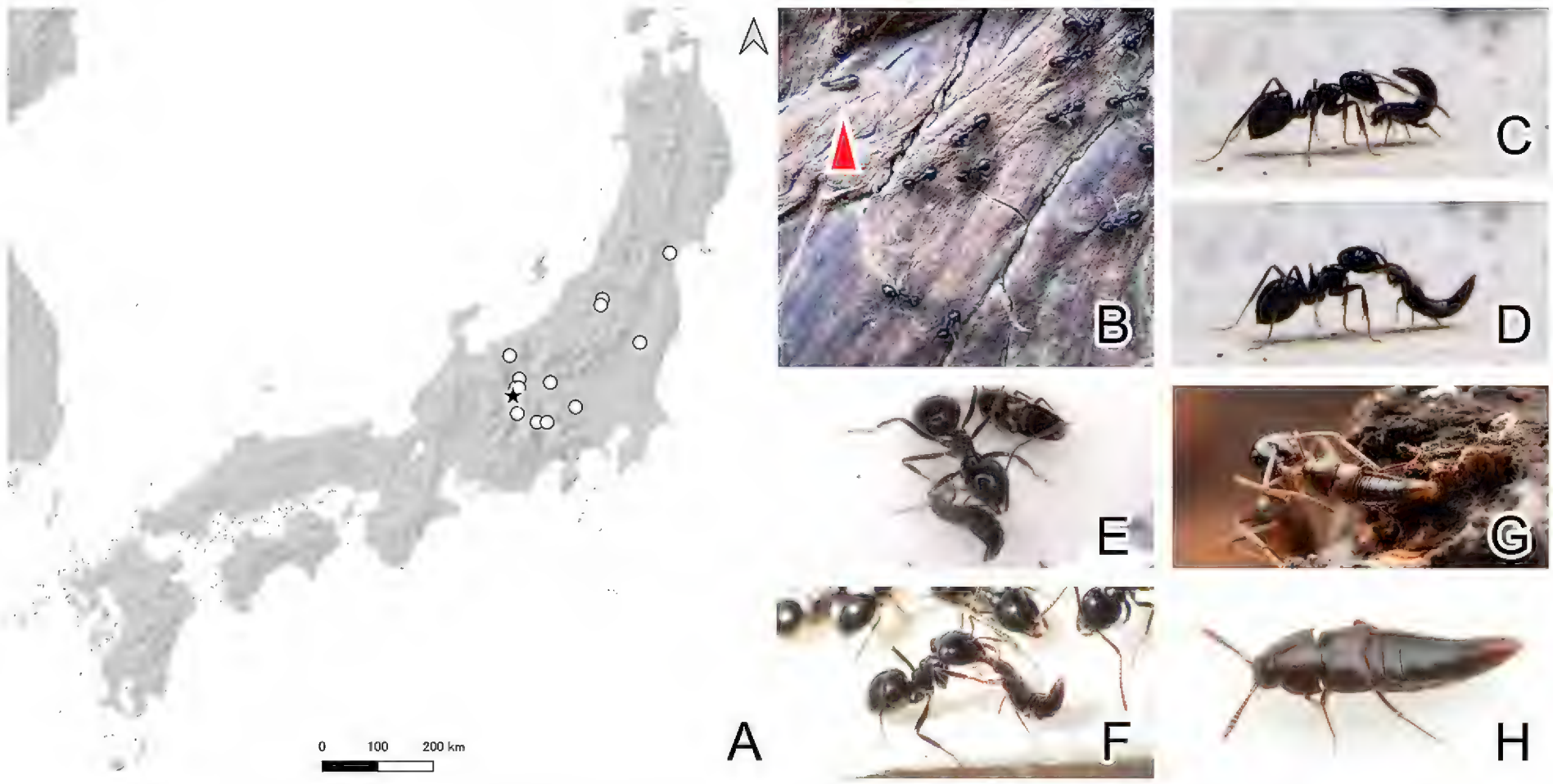

Figure 8. *Homoeusa laevigata* Sharp, 1888. **A.** Distribution map; black star – the type locality ("Seba"); white circles – collection data examined in this paper; **B.** A walking adult (red arrow) in a foraging trail of *Lasius nipponensis* on a trunk, Matsumoto-shi, Nagano-ken, Honshu; **C–E.** Snapped images from videos shot indoors; **C** raising abdomen to an ant; **D.** Later begging for food and succeeding in trophallaxis; **E.** Licking host ant's foreleg; **F.** Another shot of trophallaxis (photographed by Takuto Hashizume); **G.** Living individual from Kai-shi, Yamanashi-ken (photographed by Taku Shimada); **H.** Clear image of a living adult from Nagano-ken.

posteriad entirely (Fig. 7B); pronotum and elytra covered with shortened setae (Fig. 7B, C); metaventral process hardly produced; male 8th sternite (Fig. 7E) slightly emarginated at the middle of the posterior margin; median lobe of aedeagus bulbous; basal part of copulatory piece large. This species is similar to *H. gigantea* sp. nov. in body size and shape but can be distinguished by its blackish color and shortened setae on the pronotum and elytra.

Redescription. ***Body*** (Figs 3B, 8G, H) medium-sized, broad, somewhat limuloid; dorsal surface mostly polished.

Head small; color blackish brown; eyes small. Antennae (Fig. 7A) short, gently clubbed; relative length of each antennal segment from first to 11th, 3.2: 1.95: 1.48: 1.18: 1.14: 1.00: 1.00: 1.11: 1.43: 1.64: 4.5.

Thorax. Pronotum (Fig. 7B) subrectangular, transverse (PW/PL, 1.53–1.57), widest at posterior 1/3, postero-lateral angle distinctly acute, posterior margin distinctly sinuate, blackish brown, surface finely covered with shortened setae and punctures, polished and hardly reticulated. Elytra (Fig. 7B, C) distinctly widened posteriad entirely, posterior margins shallowly notched near lateral corners, blackish brown, surface finely covered with shortened setae and punctures, polished and hardly reticulated. Hind wings developed. Mesoventral process (Fig. 7D) very narrow, with indistinct medial carina, apex sharply pointed, reaching middle of mesocoxal cavities. Metaventral process hardly produced.

Abdomen elongate, narrowed posteriad; surface covered with very short setae and each posterior margin with long stout setae; slightly reticulated.

Male: 8th sternite (Fig. 7E) slightly emarginated at postero-median margin; median lobe of aedeagus (Fig. 7G) bulbous, length about 0.60 mm, apical lobe thick and almost straight, apex gently pointed in lateral view, apical valves broad and mitten-shaped, dorsal arms very short, basal part of copulatory piece large. Paramere (Fig. 7H) length about 0.68 mm; apical lobe of paramere long and narrow, length about 1/3 of whole paramere, slightly curved ventrally; four setae, normally arranged, velum normal.

Female: 8th sternite (Fig. 7F) slightly rounded at posterior margin; spermatheca (Fig. 7I, J) S-shaped, apex of basal part weakly swollen.

Variations. In some individuals, the parameral apical lobe is irregularly sharpened apicad. The arrangement of the four setae varies slightly.

Measurements (in mm) and ratios. Body parts (N = 10): BL ≈ 2.44–3.96; AL, 0.91–1.01; HW, 0.52–0.64; PL, 0.6–0.75; PW, 0.94–1.15; EL, 0.48–0.56; EW, 0.96–1.16; HTL, 0.6–0.72; PW/PL, 1.53–1.57; AL/PL, 1.34–1.51; HTL/PL, 0.96–1.03.

Differences between sexes: AL/PL (male, N = 5), 1.43–1.51; AL/PL (female, N = 5), 1.34–1.42.

Distribution. Japan (Honshu) (Fig. 8A).

Symbiotic hosts. *Lasius fuliginosus* species group: *L. nipponensis*.

Bionomics. *Homoeusa laevigata* can be observed in *Lasius nipponensis* foraging trails on forest floors or at the base of trunks (Fig. 8B) from May to August. No individuals were collected using FIT.

This species appears to be more integrated into its host colony than other *Homoeusa* species. Trophallactic behavior with the host ant worker has been observed around nests and foraging trails (Maruyama et al. 2013). In addition, near a colony, TN observed them licking the workers' legs and

bodies as the worker ants groomed each other. In the indoor observations, they frequently raised the tip of their abdomen toward host ant workers (Fig. 8C), grooming (Fig. 8E), and displaying trophallaxis (Fig. 8D, F). Unexpectedly, they were also observed eating food by themselves indoors.

Remarks. The presently known distribution of *H. laevigata* (Fig. 8A) is restricted to the east of Hida Mountains in central Honshu. TN examined the collection by Mr. K. Kinomura from some colonies of *L. nipponensis* in Takayama-shi, Gifu-ken, and surveyed a single colony of the ant in June in Motosu-shi, Gifu-ken. These surveys did not identify *H. laevigata* west of the Hida Mountains. Considering the absence of this species with *Lasius* species other than *L. nipponensis*, and their behavior toward host ant workers, this species could be a specialist for this ant species.

Homoeusa japonica Sharp, 1874

Figs 2B, E, 3C, 9A–L, 10A–H

(Japanese name: Yamato-hirata-ariyadori)

Homoeusa japonica Sharp, 1874: 5 (original description); Schülke and Smetana 2015; 682 (catalogue); Maruyama et al. 2013: 25 (distribution and bionomics mentioned).

"*Homoeusa acuminata*"; Sharp 1888: 283 (recorded from "Miyanoshita" as *H. acuminata*, which is a misidentification).

Type material. ***Lectotype*** (Fig. 1B, E) • here designated; ♂; "Japan." / G. Lewis." // "Sharp Coll." / 1905-313" // "Type" (red round curator label) // "SYN-TYPE" (blue round curator label) // "Homoeusa" / "japonica" / "type D.S." "LECTOTYPE" / "*Homoeusa*" / "*japonica*" / "SHARP, 1874" / "det. Maruyama, 2003" // "NHMUK014379775" (NHM).

Nontypes in the Sharp Collection. • 1 ex.; "Homoeusa" / "japonica" / "var." / "Japan Lewis." // "Japan." / G. Lewis." (written on the card which the specimen mounted) // "Sharp Coll." / 1905-313" // "Homoeusa" / "japonica" // "*Homoeusa*" / "*japonica*" / "SHARP, 1874" / "det. Maruyama, 2003" // (NHM) • 1 ex.; "Japan." / "G. Lewis." / "Sharp Coll." / 1905-313" // "Homoeusa" / "japonica Sharp" // "*Homoeusa*" / "*japonica*" / "SHARP, 1874" / "det. Maruyama, 2003" // (NHM) • 2 exs.; "Japan." / "G. Lewis." / "1910-320." // "Homoeusa japonica" // "*Homoeusa*" / "*japonica*" / "SHARP, 1874" / "det. Maruyama, 2003" // (NHM) • 1♂ "Miyanoshita" // "Japan." / "G. Lewis." / "1910-320." // "Homoeusa" / "acuminata" // "*Homoeusa*" / "*japonica*" / "SHARP, 1874" / "det. Maruyama, 2003" // "Sharp (1874)" / "recorded as" / ""H. acuminata"" / "M. M." (NHM).

Additional material examined. Japan: Honshu: Aomori-ken • 2♂♂; Hyakuzawa-higashi, Iwakisan [40.629, 140.327], Hirosaki-shi; 25.VI.2023; TS. Nozaki leg. (KUM). **Iwate-ken** • 1 ex.; Gandô-ko, Morioka-shi; 9.VI.2019; N. Nakaya leg. LFcfF (IPMM) • 3 exs.; Takamatsu-kôen, Morioka-shi; 22.VII.2019; N. Nakaya leg. LFcfF (IPMM) • 1 ex.; Kitayama-sansakuro, Morioka-shi; 19.V.2019; N. Nakaya leg. LFcfF (IPMM) • 1 ex.; same locality; 5.V.2019; N. Nakaya leg. LFcfF (IPMM) • 1♂, 3 exs.; Kitayama, Morioka-shi; 3.V.2023; N. Nakaya leg. LFcfF (IPMM). **Miyagi-ken** • 1♀; Naruko-onsen, Osaki-shi; 14–17.VI.1999; M. Sano leg. LFO (KUM) • 1♂; Aoba-yama, Sendai-shi; 17.VII.2004; K. Mizota leg. LFN (KUM) • 2♀♀; Toriido-yama, Komono-chô; 2.VI.2012; N. Tsuji leg. (KUM). **Akita-ken** • 1♂; Tamagawa, Tazawako, Semboku-shi; 12–13.VI.1999; M. Sano leg. LFcfF (KUM). **Fukushima-ken** • 1♂, 2 exs.; Kashi Spa., Nishigo-mura; 16.VI.1998; M. Maruyama leg. LFcfF (KUM) • 1♀, 2 exs.; same locality; 17.VI.1998; M. Maruyama leg. LFcfF (KUM) • 1♂, 1 ex.; Yukiwari-bashi, Nishigo-mura; 29.VII.2000; T. Kobashi leg. (KUM) • 3 exs.; Mizuhiki, Tateiwa, Minamiaizu-machi; 12.VI.2004; H. Kamezawa leg. LFcfF (cKam). **Ibaraki-ken** • 1♂; Sadanami, Sekimoto-chô, Kitaibaraki-shi; 4.V.2022; Y. Komatsuzaki leg. (KUM) • 1♂; Oshô-yama, Kitaibaraki-shi; 24.IV.2022; S. Fuda leg. (KUM) • 1 ex.; Takeo-rindo (alt. 450 m), Hitachiota-shi; 3.V.2022; Y. Komatsuzaki leg. (KUM) • 1♂; Asahi-tôge, Tsuchiura-shi; 8.V.2022; Y. Komatsuzaki leg. (KUM) • 2 exs.; Nagai, Tsuchiura-shi; 27.IV.2022; Y. Komatsuzaki leg. (KUM). **Tochigi-ken** • 1♂, 1♀, 72 exs.; Ichikai-machi; 29.IV.–2.V.2002; S. Nagashima leg. LFcfF (KUM). **Gunma-ken** • 2♂♂, 2♀♀, 4 exs.; Nakanojo Forest Park, Nakanojo-machi; 8.VI.2001; T. Watanabe leg. (KUM) • 1 ex.; "4km NW Onishidashi Rock Gdn."; "18–21.VII.80" [1980]; A. & Z. Smetana leg. (NMST, KUM, ex A. Smetana coll.) • 1 ex.; Sakurayama, Fujioka-shi; 3.V.1998; S. Arai leg. (KUM) • 1♀, 28 exs.; Sakurayama Park, Onishi, Fujioka-shi; 9.V.1998; S. Arai leg. LFS (KUM) • 1♂, 21 exs.; Mt. Sakurayama, Onishi, Fujioka-shi; 9.V.1998; K. Toyoda leg. LFS (KUM) • 6 exs.; same locality; 18.V.1998; K. Toyoda leg. LFS (KUM) • 5♂♂, 1♀, 18 exs.; same locality; 22.V.1999; Shiho Arai leg. LFS (KUM) • 5 exs.; Nageishi-tôge, Fujioka-shi; 5.VI.2001; T. Watanabe leg. (KUM). **Saitama-ken** • 3 exs.; Sugiyama Jôshi, Ranzan-machi; 29.IV.2005; K. Toyoda leg. (KUM) • 1 ex.; Mino-yama, Minano-machi; 15.VII.2000; K. Toyoda leg. (KUM) • 10 exs.; Shioyama, Ranzan-machi; 21.VI.1996; K. Toyoda leg. (KUM) • 1♂, 4 exs.; same locality; 8.VI.1997; K. Toyoda leg. (KUM) • 2 exs.; Mt. Shioyama, Ranzan-machi; 10.V.1998; K. Toyoda leg. LFcfF (KUM) • 1 ex.; same locality; 3.VII.1998; K. Toyoda leg. (KUM) • 2 exs.; Shiro-yama, Kamagata, Ranzan-machi; 17.VI.2000; K. Toyoda leg. (KUM) • 1 ex.; Near Toki-gawa, Ranzan-machi; 22.IV.1999; K. Toyoda leg. LFcfF (KUM) • 5 exs.; Toki-gawa, Ranzan-machi; 25.IV.1999; K. Toyoda leg. (KUM) • 2 exs.; same locality; 14.V.2000; K. Toyoda leg. (KUM) • 1 ex.; Shôgunsawa, Ranzan-machi; 21.IV.1999; K. Toyoda leg. (KUM) • 2 exs.; Shiroishi-tôge, Higashichichibu-mura; 9.V.1999; K. Toyoda leg. (KUM) • 3 exs.; same locality; 20.VI.1999; S. Arai leg. (KUM) • 2 exs.; Kuroishi Jinja, Kumai, Hatoyama-machi; 29.IV.2000; S. Arai leg. LFS (KUM) • 1♂, 1 ex.; Nr. Ôno Pass, Tokigawa-machi; 5.VIII.1998; K. Toyoda leg. LFcfF (KUM) • 1 ex.; Ushidatekubo (alt. 830 m) [35.9685, 139.1793], Tokigawa-machi; 21.V.2023; S.T. Inoue & N. Katsube leg. LFcfF

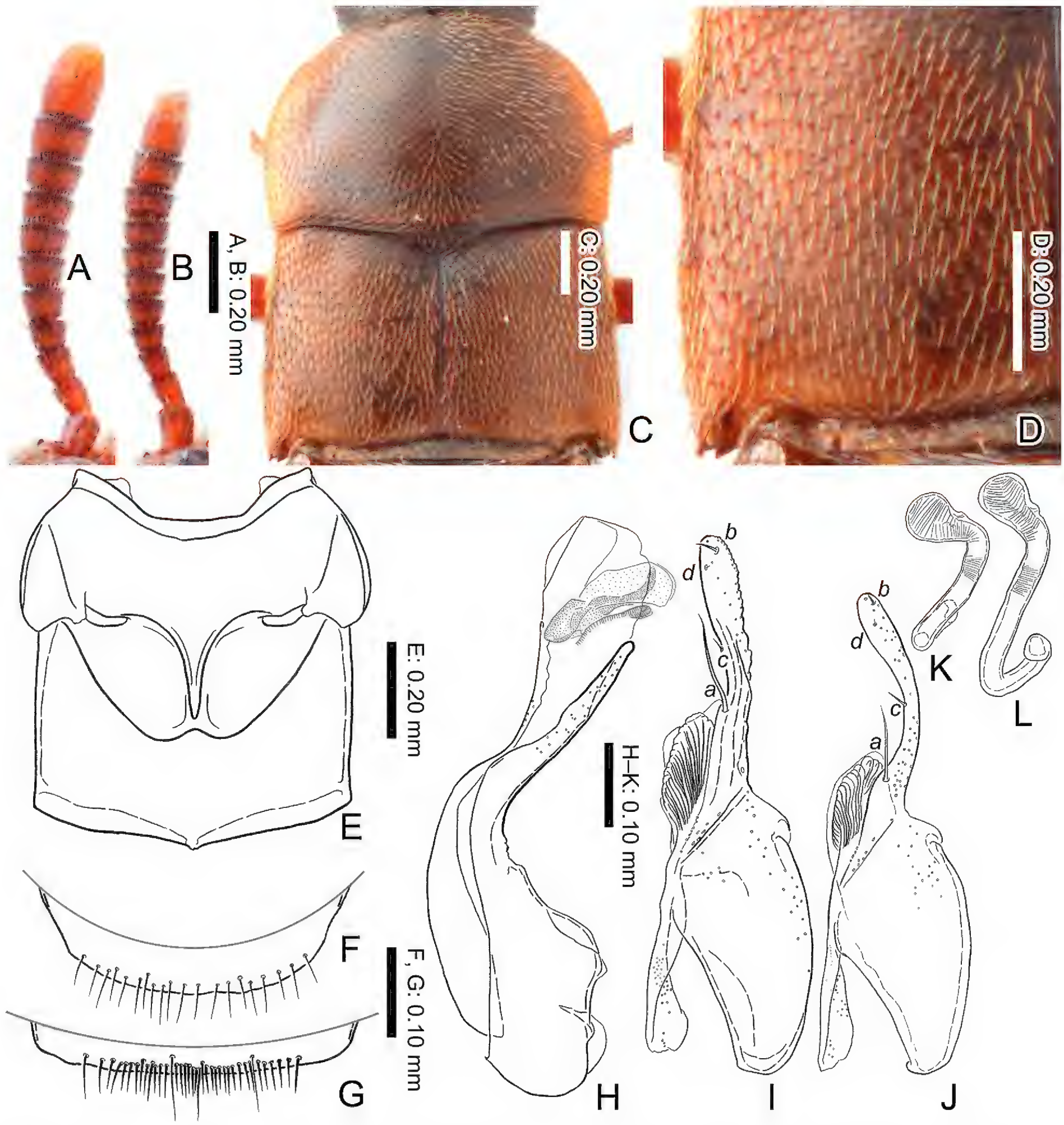

Figure 9. *Homoeusa japonica* Sharp, 1874. **A, B.** Antenna; **A.** Male; **B.** Female; **C.** Pronotum and elytra; **D.** Zoomed view of elytron; **E.** Meso- and metaventrite; **F, G.** Posterior margin of 8th sternite; **F.** Male; **G.** Female; **H.** Median lobe of aedeagus from lateral view; **I, J.** Paramere of aedeagus from lateral view: **I.** Western population; **J.** Eastern population; **K, L.** Spermatheca.

(KUM) • 1 ex.; Hashidate, Chichibu-shi; 26.IV.1998; K. Toyoda leg. LFS (KUM) • same locality; 26.IV.1998; S. Arai leg. (KUM) • 1♂, 1 ex.; same locality; 17.VIII.1999; K. Toyoda leg. LFN (KUM) • 1♀, 5 exs.; same locality; 30.VII.2000; K. Toyoda leg. LFN (KUM) • 1 ex.; same locality; 7.VI.2002; K. Toyoda leg. (KUM) • 1 ex.; Tenjin-sha, Kita-hirasawa, Hidaka-shi; 4.VI.1999; K. Toyoda leg. (KUM). **Chiba-ken** • 11 exs.; Azeta, Sakura-shi; 20. VI.1998; M. Maruyama leg. LFS (KUM) • 1♀, 4 exs.; same locality; 23–24.VI.1998; M. Maruyama leg. LFS (KUM) • 2 exs.; same locality; 20–26.VI.1998; M. Maruyama leg. LFS (KUM) • 2 exs.; same locality; 24. VI.1998; M. Sano leg. (KUM) • 3 exs.; Aoba, Chiba-shi, 24.VI.1998; M. Maruyama leg. LFS (KUM) • 6 exs.; Mt. Mifuneyama, Shôkô, Kimitsu-shi; 24.IV.2006; H. Ono leg. LFN (KUM) • 6 exs.; same locality; 7.V.2006; H. Ono leg. (KUM) • 1♀; Umegase, Daifuku-yama, Ichihara-shi, 6.V.1998; S. Naomi leg. (KUM) • 2 exs.; Shimin-nomori Yachô-no-mori, Toyooka, Futtsu-shi; 19.IV.2006; H. Ono leg. (KUM). **Tokyo-to** • 2 exs.; Kurosawa, Oume-shi; 29.IV.1998; U. Kurosu leg. (SPMN) • 1 ex.; Dokan-bori, Imperial Palace, Chiyoda-ku; 17.V.2000; T. Shimada leg. (NSMT) • 3 exs.; Mt.Takao, Hachiôji-shi; 1.V.1985; S. Kubota leg. (KUM) • 1 ex.; Mt. Takao (alt. 500 m),

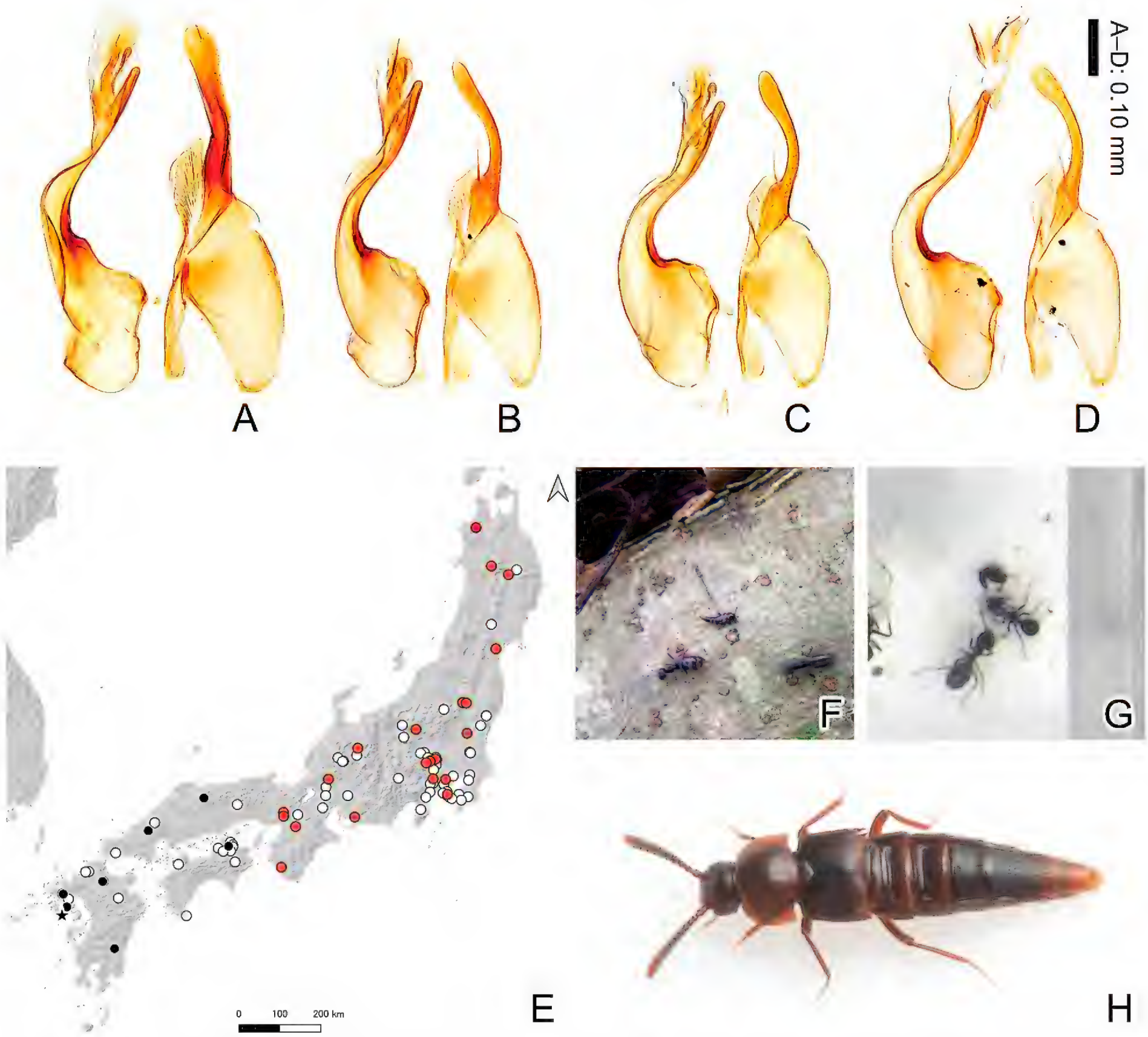

Figure 10. *Homoeusa japonica* Sharp, 1874. **A–D.** Variations of aedeagi; **A.** Takamatsu-shi, Kagawa-ken, Shikoku; **B.** Motosu-chô, Gifu-ken, Honshu; **C.** Ichikai-machi, Tochigi-ken, Honshu; **D.** Nakanojo-shi, Gunma-ken; **E.** Distribution map; black star – the type locality ("Nagasaki"); white circles – collection data examined in this paper; black circle – dissected male from the western population; red circle – dissected male from the eastern population; **F.** A walking adult in a foraging trail of *Lasius* cf. *fliginosus* on a fallen branch, Mt. Hikosan, Fukuoka-ken, Kyushu; **G.** Snapped images from videos shot indoors, raising abdomen to an ant; **H.** Clear image of living adult from Nagano-ken.

Hachiôji-shi; 1.VII.1998; M. Maruyama leg. LFS (KUM) • 3 exs.; same locality; 4.VII.1998; M. Maruyama leg. LFS (KUM) • 1 ex.; same locality; 1–4.VII.1998; M. Maruyama leg. LFS (KUM) • 1♂, 2♀♀, 20 exs.; same locality; 4.VI.2001; M. Maruyama leg. LFS (KUM, NHM) • 3 exs.; Mt.Takao (alt. 450 m), Hachiôji-shi; 4.VI.2001; M. Maruyama leg. LFS (NHM). **Kanagawa-ken** • 1♂, 1 ex.; Mt. Masukata, Kawasaki-shi; 15. VI.1996; K. Kawada leg. (KUM) • 5 exs.; Ikuta-ryokuchi, Kawasaki-shi; 13.IV.2002; K. Matsumoto leg. (KUM) • 4 exs.; Mikage, Tsukui, Sagamihara-shi; 18.IV.1976; R. Kiryu leg. (SCM) • 2 ex.; same locality; 23.IV.1977; R. Kiryu leg. (SCM) • 1ex.; same locality; 14.IV.1979; R. Kiryu leg. (SCM) • 1ex.; same locality; 31.V.1979; R. Kiryu leg. (SCM) • 2exs.; same locality; 9.VI.1979; R. Kiryu leg. (SCM) • 1 ex.; Nanzawa, Tsukui, Sagamihara-shi; 29.V.1976; R. Kiryu leg. (SCM) • 4 exs.; same locality; 14.V.1977; R. Kiryu leg. (SCM) • 2 exs.; same locality; 20.V.1977; R. Kiryu leg. (SCM) • 1 ex.; same locality; 22.IV.1979; R. Kiryu leg. (SCM) • 1 ex.; same locality; 24.V.1979; R. Kiryu leg. (SCM) • 1 ex.; Miyagase, Tsukui; 9.VII.1976; R. Kiryu leg. (SCM) • 12 exs.; Toya, Tsukui, Sagamihara-shi; 11.V.1976; R. Kiryu leg. (SCM) • 8 exs.; same locality; 27.IV.1976; R. Kiryu leg. (SCM) • 5 exs.; same locality; 29.IV.1977; R. Kiryu leg. (SCM) • 1 ex.; same locality; 17.IV.1979; R. Kiryu leg. (SCM) • 17 exs.; Kawasaki; 1.V.1985; S. Kubota leg. (KUM) • 2 exs.; "Trap (liver) St.1 Y.N.S"; Yokohama-shi;

10.V.1988; Y. Kominami leg. (SPMN) • 3 exs.; Niiharu-shiminno-mori, Yokohama-shi; 21.V.2001; T. Watanabe leg. LFO, LFS (KUM) • 1 ex.; Nonkendainomori, Enkaizan, Yokohama-shi; 3.V.1991; K. Kubo leg. (SPMN) • 1 ex.; Yakunimi-yama [35.35, 139.17], Hadano-shi; 26.VI.2014; O. Saitoh leg. LFcfF (KPMNH) • 4 exs.; Kawana, Fujisawa-shi; 14.V.2001; T. Watanabe leg. (KUM) • 1♂, 15 exs.; Jimmu-ji, Zushi-shi; 20.VI.2003; M. Maruyama leg. (KUM) • 1 ex.; Futagoyama, Zushi-shi; 15.IV.1991; H.Watarai leg. (SPMN) • 1 ex.; Kinugasa, Yokosuka-shi; 26–27.IV.1995; Y. Kaneko leg. (KUM) • 3 exs.; Miyanoshita, Hakone, Hakone-machi; 5.V.1987; Y. Hirano leg. (KUM) • 1 ex.; Hakone; 1.V.1974; Y. Hirano leg. (KUM) • 1 ex.; Miura Kurihama, Sagamihara-shi; 9.V.1979; R. Kiryu leg. (SCM). **Yamanashi-ken** • 1 ex.; Ashiyu-onsen, Ashiyu-mura; 23.V.2001; T. Watanabe leg. (KUM). **Nagano-ken** • 1♀, 1 ex.; Bôdaira, Shiga-kôgen (alt. 1,160 m) [36.7203, 138.4656], Yamanouchi-machi; 9.VII.2022; TS. Nozaki leg. LFM (KUM) • 1♂; Fujii, Satoyamabe, Matsumoto-shi; 7.VII.2022; TS. Nozaki leg. LFN (KUM). **Gifu-ken** • 2♂♂; Bijo Pass, Takayama-shi, 5.VIII.2003; K. Kinomura leg. (KUM) • 8 exs.; Ogamigo, Shôkawa (alt. 800 m), Takayama-shi; 5–6. VIII. 1998; M. Maruyama leg. LFS (KUM) • 1 ex.; Isshiki, Takayama-shi; 23.V.2004; K. Kinomura leg. LFN (KUM) • 1 ex.; Mt. Kentô, Takayama-shi; 6.VII.2003; K. Kinomura leg. (KUM) • 1♂; Neo-Mizudori, Motosu-shi; 4.VII.2022; TS. Nozaki leg. LFN (KUM) • 1 ex.; Miyachi [Gifu-ken?]; 29.IV.1980; Y. Ohta leg. (KUM) • 1 ex.; Yôrô Park, Yôrô-chô; 29.IV.2004; K. Kinomura leg. (KUM). **Shizuoka-ken** • 1 ex.; Kumazaka, Izu-shi; 30.V.2022; T. Tenma leg. (KUM). **Aichi-ken** • 1♀, 2 exs.; Jôkôji-kôen, Seto-shi; 16.IV.2023; T. Tenma leg. (KUM) • 1♂, 7 exs.; Magarida, Toyooka-chô, Gamagori-shi; 4.V.2024; T. Temma leg. LFcfF (KUM). **Kyoto-fu** • 1♀; Amagase Forest, Uji; 8.V.2013; T. Ito leg. (OMNH). **Osaka-fu** • 1♂; Mt. Myoken; 2.V.2015; T. Ito leg. (OMNH) • 1♀; same locality; 8.V.2012; T. Ito leg. (OMNH) • 1♂; Mino-o Park; 6. VI.2009; T. Ito leg. (OMNH). **Nara-ken** • 1♂; Yamato-Koriyama, Yata; 18.V.2009; T. Ito leg. (OMNH). **Wakayama-ken** • 2♂♂, 2♀♀, 3 exs.; Nishihara (alt. 180 m) [33.781, 135.413], Hidakagawa-chô; 11.VI.2023; TS. Nozaki leg. LFS (KUM). **Tottori-ken** • 1♂; Mt. Hôbutsu (alt. 420 m) [35.2271, 133.4561], Hino-chô; 17.VI.2024; TS. Nozaki leg. (KUM). **Shimane-ken** • 1♂, 3 exs.; Urahikimi, Masuda-shi, Masuda-shi; 6.VI.1998; S. Nomura leg. LFS (KUM). **Okayama-ken** • 2♂♂, 1♀, 5 exs.; Ono Shine, Kawakami, Ohara-chô, Mimasaka-shi; 5.V.2009; Y. Fujitani leg. LFS (KUM) • 1 ex.; same locality; 7.V.2009; Y. Fujitani leg. (KUM) • 1 ex.; same locality; 15.V.2009; Y. Fujitani leg. (KUM) • 1 ex.; same locality; 24.V.2009; Y. Fujitani leg. (KUM). **Hiroshima-ken** • 1♂, 3 exs.; Kakezu-yama, Higashiyawatahara (alt. 850–1,126 m), Kitahiroshima-chô; 9–18.V.2009; TA. (Tastuya) Nozaki & Y. Nozaki leg. FIT (KUM). **Yamaguchi-ken** • 1 ex.; Nishimagura, Kusunoki (alt. 100 m); Ube-shi; 30.V–1.VI.2000; T. Kishimoto leg. (KUM). **Shikoku: Tokushima-ken** • 1 ex.; Takashiro-yama, Naka-chô; 24.V.2007; H. Fujimoto leg. (KUM). **Kagawa-ken** • 1 ex.; Furodani, Miki-chô; 30.VII.2000; K. Izawa leg. LFcfF (KUM) • 1 ex.; Usa-jinja, Nagaona, Sanuki-shi; 31.V.2001; Maruyama et al. leg. LFS (KUM) • 1♂, 1 ex.; Fujio-Jinja, Nishi-uta-chô, Takamatsu-shi; 31.V.2001; Maruyama et al. leg. LFN (KUM) • 3 exs.; same locality; 1.VI.2001; Maruyama et al. leg. LFN (KUM) • 1 ex.; Ôtawa, Nagao, Sanuki-shi; 22.V.2000; F. Ito leg. LFM (KUM) • 1♂, same locality; 7.VI.2001; F. Ito leg. (KUM) • 2 exs.; Kamiyama, Miki-chô; 1.VI.2001; Maruyama et al. leg. LFS (KUM) • 13 exs.; Atago-yama, Kotohira-chô; 1.VI.2001; M. Maruyama leg. LFS (KUM) • 1♀, 7 exs.; Ôtaki-san, Shionoe-chô, Takamatsu-shi; 2.VI.2001; Maruyama et al. leg. (KUM) • 1 ex.; Daisen-zan, Kotonami-chô; 1.VI.2001; Maruyama et al. leg. LFM (KUM). **Ehime-ken** • 1 ex.; Higashino, Matsuyama-shi; 30.V.2015; Y. Hisasue leg. (KUM) • 3♀♀; same locality; 30.V.2015 (KUM) • same locality; 22.IV.2017; R. Koga leg. (EUMJ). **Kochi-ken** • 1♀; Ashizuri-misaki (alt. 120 m) [32.748, 133.0136], Tosashimizu-shi; 21.V.2024; TS. Nozaki leg. (KUM). **Kyushu: Fukuoka-ken** • 1 ex.; Mt. Inunaki, Miyawaka-shi; 22.V.1980; T. Gotô leg. (KUM) • 1 ex.; Mt. Tachibana; 6–9.V.1996; T. Ueno, Y. Higashiura & H. Goto leg. FIT (cSch) • 1 ex.; same locality; 10–14.V.1996; T. Ueno, Y. Higashiura & H. Goto leg. FIT (cSch) • 1♀; Takasubaru Highland, Mt Hikosan, Soeda-machi; 26.VI.2022; S.G. (Shugo) Inoue leg. LFcfF (KUM) • 2 exs.; Biol. Lab. Mt. Hikosan, Soeda-machi; 7.VI.1993; S. Nomura leg. LFcfF (KUM) • 2♂♂, 1♀; Biol. Lab. KU, Hikosan, (alt. 750 m) [33.48, 130.90], Soeda-machi; 22.V.2022; TS. Nozaki leg. LFcfF (KUM) • 2♂♂, 1♀; same locality; 16.V.2023; TS. Nozaki leg. LFcfF (KUM). **Saga-ken** • 1♀, 1 ex.; Mt. Kurokami-yama, Arita-chô; 28.IV.2019; M. Nishida leg. LFcfF (KUM) • 2 exs.; same locality; 15.V.2019; M. Nishida leg. (KUM) • 1♂; Mt. Kurokami-yama (alt. 400 m), Arita-chô; 9.V.2021; Y. Hisasue leg. LFcfF (KUM) • 1 ex.; Tosen-zan, Ureshino-shi; 29.IV.2018; M. Nishida leg. FIT (KUM). **Nagasaki-ken** • 1♂; Tanuki-no-o, Omura-shi; 5.V.2018; M. Nishida leg. (KUM). **Oita-ken** • 2♀♀; Oike, Kurodake, Yufu-shi; 17.VI.2021; TS. Nozaki leg. (KUM). **Miyazaki-ken** • 1♂; Ômoridake forest road (alt. 600 m) [32.0435, 131.1973], Aya-machi; 12.VI.2024; TS. Nozaki & T. Kinoda leg. LFS (KUM).

Diagnosis. This species is distinguished from the other species of the genus by the following combination of characteristics: pronotal posterolateral angle around 90 degrees (Fig. 9C); elytra distinctly widened posteriad entirely (Fig. 9C); apical lobe of paramere long, length about half of whole paramere, curved ventrally, apex simply round (Fig. 9I, J). This species is quite similar to *H. longicornis* in its general appearance; however, the round apex of the parameral apical lobe can separate it.

Redescription. ***Body*** (Figs 3C, 10H) medium-sized, broad, stout; dorsal surface mostly moderately polished.

Head large; color reddish brown to dark brown; eyes large. Antennae (Fig. 9A, B) long; relative length of each antennal segment from first to 11th, 2.32: 1.48: 1.19: 1.07: 1.05: 1.01: 1.00: 1.01: 1.25: 1.4: 2.88.

Thorax. Pronotum (Fig. 9C) subrectangular, transverse (PW/PL, 1.59–1.71), widest near middle, postero-lateral angle around 90 degrees, posterior margin slightly sinuate, reddish yellow to reddish brown, surface finely covered with setae and punctures, gently polished and slightly reticulated. Elytra (Fig. 9C, D) distinctly widened posteriad entirely, posterior margins shallowly notched near lateral corners, reddish yellow to reddish brown, surface finely covered with setae and punctures; gently polished and weakly reticulated. Hind wings developed. Mesoventral process (Fig. 9E) very narrow, with weak medial carina, forming Y-shaped, apex sharply pointed, reaching posterior 1/3 of mesocoxal cavities. Metaventral process weakly produced.

Abdomen elongate, narrowed posteriad; surface covered with short setae and each posterior margin with long stout setae; finely reticulated.

Male: 8th sternite (Fig. 9F) rounded at posterior margin; median lobe of aedeagus (Fig. 9H) slender, length about 0.55 mm, apical lobe narrow and elongate, slightly curved dorsally, apex gently pointed in lateral view, apical valves simple and elongate, without dorsal arms, basal part of copulatory piece very small. Paramere (Fig. 9I, J) length about 0.65 mm; apical lobe of paramere very long, length about half of whole paramere, curved ventrally, slightly dilated apicad, apex simply round; four setae, *a* far longer than others, *b* located most apically, velum short and suboval.

Female: 8th sternite (Fig. 9G) truncated or slightly rounded at posterior margin; spermatheca (Fig. 9K, L) S-shaped, base of apical part not swollen, base largely hooklike.

Variations. Geographical variations were found in the parameral apical lobe. The populations from Chugoku, Shikoku, and Kyushu had a less curved apical lobe, with a finely dentate dorsal margin (Figs 9I, 10A), whereas the population from the eastern part of Honshu had a more curved apical lobe with a smooth dorsal margin (Figs 9J, 10 B–D). The distribution of each population is shown in Fig. 10E.

Measurements (in mm) and ratios. Body parts (N = 19): BL ≈ 2.14–3.27; AL, 0.81–1.03; HW, 0.51–0.66; PL, 0.48–0.63; PW, 0.78–1.03; EL, 0.42–0.51; EW, 0.85–1.02; HTL, 0.52–0.67; PW/PL, 1.59–1.71; AL/PL, 1.36–1.86; HTL/PL, 0.94–1.15.

Distribution. Japan (Honshu, Shikoku, Kyushu) (Fig. 10E).

Symbiotic hosts. *Lasius fuliginosus* species group: *L.* cf. *fuliginosus*, *L. morisitai*, *L. nipponensis*, *L. orientalis*, *L. spathepus*.

Bionomics. *Homoeusa japonica* can be observed in *Lasius fuliginosus* species group foraging trails on the forest floor from April to August (Fig. 10F). Only a few individuals were collected using FIT (N = 7). They frequently raised the tip of their abdomen toward approaching host ant workers, both in the field and indoors (Fig. 10G).

Remarks. According to the original description (Sharp 1874), the type locality was assumed to be Nagasaki City, Nagasaki Prefecture, Kyushu. This species was rarely collected from the trails of *L. nipponensis* and *L. orientalis*.

The differences in the parameres between the two populations were significant; however, no other differences were found. They may have been distributed separately because they were never collected from the same locality. We conclude that they can be reasonably treated as intraspecific populations. This species tends to occur at lower altitudes than *H. longicornis* does.

Homoeusa longicornis Sharp, 1888

Figs 2C, F, 3D, 11A–K, 12A–F

(Japanese name: Higenaga-hirata-ariyadori)

Homoeusa longicornis Sharp, 1888: 283 (original description); Schülke and Smetana 2015; 682 (catalogue); Maruyama et al. 2013: 25 (distribution and bionomics mentioned).

Type material. ***Holotype*** (Fig. 2C, F) • ♂; "Homoeusa" / "longicornis" / "D.S. Type" (written on the card which the specimen mounted) // "Japan." / "G. Lewis." / "1910–320" // "Sapporo." / "5.VIII.–16.VIII.80." // "Type" (red round curator label) // "HOLOTYPE" / "*Homoeusa*" / "*longicornis*" / "SHARP, 1888" / "det. MARUYAMA, 2003" // "NHMUK014379776" (dissected by MM) (NHM).

Additional material examined. Japan: Hokkaido • 2 exs.; Hebinuma, Teshio-gawa, Teshio-chô; 9.VII.1992; S. Hori leg. (KUM) • 2♂♂; Mukôengaru, Engaru-chô; 25.V.2000; Y. Kida leg. (KUM) • 3 exs.; Kanayama, Makoi, Shari-chô; 24.VI.2002; Y. Kida leg. (KUM) • 3 exs.; Taihei, Maruseppu, Engaru-chô; 28.V.2000; Y. Kida leg. LFcfF (KUM) • 22 exs.; same locality; 29–31.V.2000; Y. Kida leg. LFcfF (KUM) • 11 exs.; same locality; 2–3.VI.2000; Y. Kida leg. LFcfF (KUM) • 1 ex.; same locality; 13.VI.2000; Y. Kida leg. (KUM) • 6♂♂, 5♀♀, 288 exs.; same locality; 16–17.VI.2000; Y. Kida leg. LFcfF (KUM) • 1♂, 7 exs.; same locality; 19–21.VIII.2000; Y. Kida leg. LFcfF (KUM) • 2♂♂, 1♀, 17 exs.; same locality; 25.VIII.2000; Y. Kida leg. LFcfF (KUM) • 1 ex.; Memanbetsu, Ôzora-chô; 7.VIII.2018; Y. Yoshimura leg. LFcfF (KUM) • 1 ex.; Kashiwa-gaoka-kôen, Bihoro-chô, 23.VI.2000; Y. Yamaga leg. (KUM) • 1 ex.; Mitomi-shizenkôen, Bihoro-chô; 13.VI.2000; Y. Yamaga leg. (KUM) • 2 exs.; Attoko, Nemuro-shi; 30.VI.1996; Y. Hirama leg. (KUM) • 5 exs.; Ôsawaguchi, Nopporo-shinrin-kôen, Ebetsu-shi; 2.VI.1999; M. Maruyama leg. (KUM) • 26 exs.; Ôsawaguchi, Nopporo-shizenkôen, Ebetsu-shi; 16–19.VI.2001; S. Hori leg. (KUM) • 2 exs.; Mt. Maruyama, Sapporo-shi; 6.VI.1998; M. Maruyama leg. (KUM) • 2 exs.; Tomanbetsu, Nopporo, Ebetsu-shi; 29.V.2002; M. Maruyama leg. LFcfF (KUM) • 2 exs.; Shibumbersu, Nopporo-shinrin-kôen, Ebetsu-shi; 11.V.2000; M. Maruyama leg. LFcfF (KUM) • 1 ex.; Mt. Moiwa, Sapporo-shi, 16.VI.1983; Y. Hirano leg. (KUM) • 10 exs.; Hitsujigaoka, Sapporo-shi; 18.V.2000; M. Maruyama leg. LFS (KUM) • 24 exs.; Kannon-zawa, Sapporo-shi; 1.VI.2002; M. Maruyama leg. LFcfF (KUM) • 1♂, 2♀♀, 24 exs.; same locality; 31.VI.2002; M. Maruyama leg. LFcfF (KUM) • 2 exs.; Hyakumatsuzawa, Sapporo-shi; 8.VI.1998; M.

Maruyama leg. LFcfF (KUM) • 4 exs.; Hakken-zan, Sapporo-shi; 31.V.2002; M. Maruyama leg. LFcfF & LU (KUM) • 3 exs.; same locality; 1.VI.2002; M. Maruyama leg. LFcfF & LU (KUM) • 1 ex.; Yûtoku, Ôtaki-mura, Date-shi; 24.VIII.2001; M. Maruyama leg. (KUM). **Honshu: Aomori-ken** • 1 ex.; Yokonagare-tôge (alt. 300 m) [41.264, 141.314], Higashidori-mura; 26.VI.2023; TS. Nozaki leg. LFcfF (KUM) • 1♂, 1♀, 1 ex.; Kuromori (alt. 280 m) [40.677, 140.191], Ajigasawa-machi; 24.VI.2023; TS. Nozaki leg. LFcfF (KUM) • 1♀; Yunosawa, Tokiwano (alt. 490 m) [40.633, 140.268], Hirosaki-shi; 25.VI.2023; TS. Nozaki leg. LFcfF (KUM). **Miyagi-ken** • 1♀; Torii-do-yama, Komono-chô; 2.VI.2012; N. Tsuji leg. (KUM). **Yamagata-ken** • 1♂, 1 ex.; Senjuin, Yamadera (alt. 300–320 m) [38.319, 140.448], Yamagata-shi; 15.VII.2024; K. Mizota leg. LFcfF (KUM). **Fukushima-ken** • 4 exs.; Kashi Spa., Nishigo-mura; 16.VI.1998; M. Maruyama leg. LFcfF (KUM) • 1♀, 3 exs.; same locality; 17.VI.1998; M. Maruyama leg. LFcfF (KUM) • 1 ex.; Yukiwari-bashi, Nishigo-mura; 29.VII.2000; M. Maruyama leg. (KUM). **Ibaraki-ken** • 1 ex.; Sadanami, Sekimoto-chô, Kitaibaraki-shi; 4.V.2022; Y. Komatsuzaki leg. (KUM). **Gunma-ken** • 1 ex.; Tanigawa Spa, Minakami-chô; 7.VI.2001; T. Watanabe leg. (KUM) • 1 ex.; Near Shima, Nakanojo-machi; 12.VI.1986; T. Katsumoto leg. (SCM) • 2♂♂, 1♀, 4 exs.; Nakanojo Forest Park, Nakanojo-machi; 8.VI.2001; T. Watanabe leg. (KUM) • 10 exs.; Sakurayama Park, Onishi, Fujioka-shi; 9.V.1998; Shiho Arai leg. LFS (KUM) • 4 exs.; Mt. Sakurayama, Onishi, Fujioka-shi; 9.V.1998; K. Toyoda leg. LFS (KUM) • 3 exs.; same locality; 18.V.1998; K. Toyoda leg. LFS (KUM) • 2♂♂, 3♀♀, 3 exs.; same locality; 22.V.1999; Shiho Arai leg. LFS (KUM) • 1 ex.; Shiozawa-toge, Fujioka-shi, 6.IX.2001; T. Watanabe leg. (KUM). **Saitama-ken** • 1 ex.; Mt. Sakurayama, Onishi; 2.V.2009; K. Arai leg. (KUM) • 2 exs.; Mt. Kamafuse yama, Fu-uppu (alt. 570 m), Yorii-machi; 22.IV.2006; K. Arai leg. LFcfF (KUM) • 1 ex.; Chichibu-kôgen, Higashichichibu-mura; 3.VII.1999; K. Toyoda leg. (KUM) • 6 exs.; Kasayama Sancho, Koshigoe, Ogawa-machi; 30.IV.2005; K. Arai leg. LFS (KUM) • 2 exs.; Karibazaka Pass [35.9683, 139.1816], Tokigawa-machi; 24.V.2022; TS. Nozaki leg. LFcfF (KUM) • 2 exs.; Hashidate, Chichibu-shi; 26.IV.1998; K. Toyoda leg. LFS (KUM) • 1 ex.; same locality; 26.IV.1998; S. Arai leg. (KUM) • 3 exs.; same locality; 7.VI.2002; K. Toyoda leg. LFM (KUM) • 1 ex.; Koakazawa, Irikawa, Mt. Hakutai-san, Ootaki (alt. 1,100 m), Chichibu-shi; 7–8.VI.2008; K. Arai leg. (KUM). **Tokyo-to** • 4 exs.; Mt.Takao, Hachiôji-shi; 1.V.1985; S. Kubota leg. (KUM) • 2 exs.; Mt.Takaozan, Hachiôji-shi; 26.IV.1986; A. Izumi leg. LFS (KUM) • 2 exs.; Mt. Takao, Hachiôji-shi; 1.VII.1998; M. Maruyama leg. LFS (KUM) • 1 ex.; same locality; 4.VII.1998; M. Maruyama leg. LFS (KUM) • 1 ex.; Mt. Takao (alt. 500 m), Hachiôji-shi; 1–4.VII.1998; M. Maruyama leg. (KUM) • 1♂, 1♀, 12 exs.; Mt. Takao (alt. 450 m), Hachiôji-shi; 4.VI.2001; M. Maruyama leg. (KUM) • 1♂, 1 ex.; same locality, Hachiôji-shi; 4.VI.2001; M. Maruyama leg. LFS (NHM). **Kanagawa-ken** • 2 exs.; Hokizawa, Nishi-tanzawa; 25–26.VI.1983; Y. Hirano leg. (KUM) • 1 ex.; Minami-Ashigara-shi; 11.II.1975; Y. Hirano leg. (KUM) • 2 exs.; Mt. Daiyûzan, Minami-Ashigara-shi; 28.VI.1987; A. Izumi leg. LFcfF (KUM) • 1 ex.; Daiyuzan, Hakone; 26.V.1986; Y. Shibata leg. (KUM) • 1 ex.; Daiyuzan, Ashigara; 21.V.1989; Y. Shibata leg. (KUM) • 2 exs.; Hakone; 4.V.1987; M. Tao leg. (KUM). **Niigata-ken** • 1 ex.; Ochinomizu, Tokamachi-shi; 19.IV.1998; T. Kishimoto leg. LFcfF (KUM) • 1 ex.; Foot of Mt. Uedafuji, Yuzawa-machi; 18.IV.1998; H. Yoshitomi leg. (KUM) • 1 ex.; Yuzawa-machi; 20–22.VI.2002; S. Nagashima leg. LFcfF (KUM). **Yamanashi-ken** • 1♂; Gozaishi-kôsen (alt. 900 m), Nirasaki-shi; 25.VII.2002; S. Nomura leg. LFN (KUM) • 3 exs.; Ashiyu-onsen, Ashiyu-mura; 23.V.2001; T. Watanabe leg. (KUM) • 1 ex.; same locality; 24.V.2001; T. Watanabe leg. (KUM). **Nagano-ken** • 1 ex.; Midarebashi, Chikuhoku-mura; 21.VII.1999; T. Watanabe leg. (KUM) • 1♂, 1 ex.; Ôkubo, Komoro-shi; 29–30.IV.2001; H. Kamezawa leg. LFcfF (cKam). **Gifu-ken** • 2♂♂; Bijo Pass, Takayama-shi; 5.VIII.2003; K. Kinomura leg. (KUM) • 1♂, 1 ex.; Hirugano Bunsuirei Park, Gujo-shi; 10.VI.2013; K. Kinomura leg. (KUM) • 1♂; Mt. Kentô, Takayama-shi; 6.VII.2003; K. Kinomura leg. (KUM) • 2♂♂; Yôrô Park, Yôrô-chô; 29.IV.2004; K. Kinomura leg. (KUM). **Shizuoka-ken** • 2 exs.; Utsuno, Fujinomiya; 30.V.2000; T. Watanabe leg. Fish feed Bait, pinned with a Phidole ant det. by K. Matuura (KUM). **Aichi-ken** • 1♀; Jôkôji-kôen, Seto-shi; 16.IV.2023; T. Tenma leg. (KUM). **Kyoto-fu** • 1♂, 1 ex.; Tenno-zan, Oyamazaki-chô; 16.IV.2008; T. Ito leg. (OMNH) • 2 exs.; same locality; 31.V.2008; T. Ito leg. (OMNH) • 1♀; Amagase Forest, Uji-shi; 8.V.2013; T. Ito leg. (OMNH) • 1 ex.; Otokoyama, Yawata-shi; 11.V.2014; T. Ito leg. (OMNH) • 1♂; same locality; 14.VI.2008; T. Ito leg. (OMNH). **Osaka-fu** • 1♂; Mt. Mikusa, Nose-chô; 21.VI.2008; T. Ito leg. (OMNH) • 1♂; Mino-o Park, Mino-shi; 28.V.2008; T. Ito leg. (OMNH). **Hyogo-ken** • 2♂♂, 1♀, 1 ex.; Dojo, Kobe-shi; 13.IV.2009; T. Ito leg. (OMNH). **Nara-ken** • 1♀; Yamato-Koriyama, Yata; 9.VII.2009; T. Ito leg. (OMNH) • 1♂; same locality; 18.V.2009; T. Ito leg. (OMNH). **Wakayama-ken** • 1♂; Kimitoge Pass, Hashimoto-shi; 1.VI.2009; T. Ito leg. (OMNH) • 1♂; same locality; 27.IV.2014; T. Ito leg. (OMNH). **Tottori-ken** • 1 ex.; Mt. Daisen, Daisen-chô; 3–5.VI.1980; S. Naomi leg. (KUM). **Shimane-ken** • 1♂; Urahikimi, Masuda-shi, Masuda-shi; 6.VI.1998; S. Nomura leg. LFS (KUM). **Hiroshima-ken** • 1♂; Mt. Iwahi (alt. 1,110 m) [35.0712, 133.2192], Shobara-shi; 16.VI.2024; TS. Nozaki leg. LFcfF (KUM). **Shikoku: Tokushima-ken** • 2 exs.; Takashiro-yama, Naka-chô; 24.V.2007; H. Fujimoto leg. LFS (KUM). **Kagawa-ken** • 1 ex.; Ôtawa, Nagao, Sanuki-shi; 22.V.2000; F. Ito leg. (KUM) • 2 exs.; Daisen-zan, Kotonami-chô; 1.VI.2001; M. Maruyama et al. leg. LFN (KUM) • 1 ex.; same locality; 3.V.2004; H. Fujimoto leg. LFcfF (KUM). **Ehime-ken** • 1♂, 1♀; Mt. Ishiduchi, Saijo-shi; 29.VI.2014; Y. Hisasue leg. (KUM). **Kochi-ken** • 1♂, 1♀; Hokigamine (alt. 500 m) [33.6719, 133.6846], Kami-shi; 11.V.2023; TS. Nozaki leg. LFS (KUM).

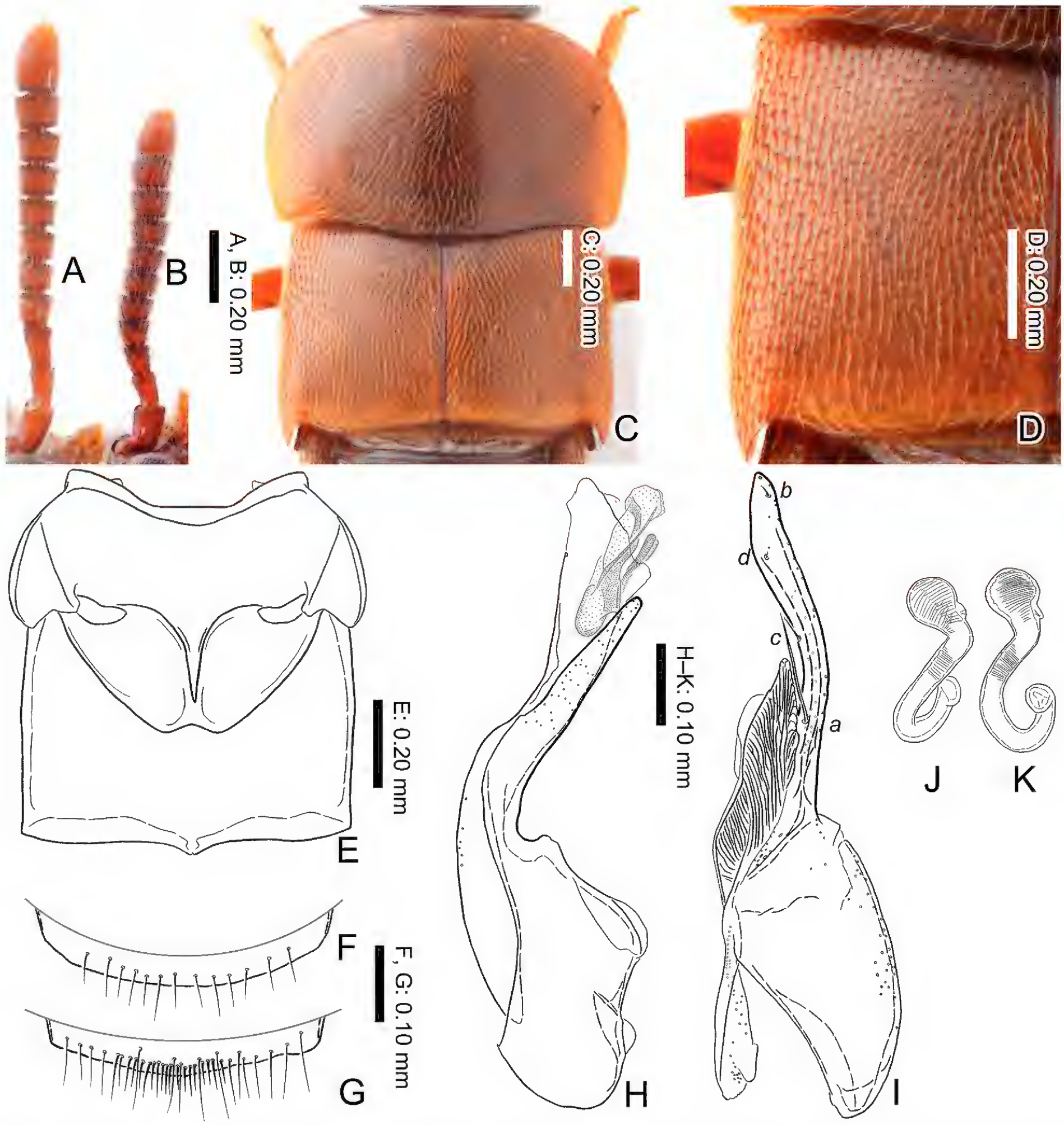

Figure 11. *Homoeusa longicornis* Sharp, 1888. **A, B.** Antenna; **A.** Male; **B.** Female; **C.** Pronotum and elytra; **D.** Zoomed view of elytron; **E.** Meso- and metaventrite; **F, G.** Posterior margin of 8th sternite; **F.** Male; **G.** Female; **H.** Median lobe of aedeagus from lateral view; **I.** Paramere of aedeagus from lateral view; **J, K.** Spermatheca.

Diagnosis. This species is distinguished from the other species of the genus by the following combination of characteristics: pronotal posterolateral angle around 90 degrees (Fig. 11C); elytra distinctly widened entirely posteriad (Fig. 11C, D); apical lobe of paramere very long, length over half of whole paramere, curved ventrally, apex blade-shaped (Fig. 11I). This species is quite similar to *H. japonica* in its general appearance but can be separated by the blade-like apex of its parameral apical lobe.

Redescription. ***Body*** (Figs 3D, 12F) large, broad, stout; dorsal surface mostly moderately polished.

Head large; color reddish brown to dark brown; eyes small. Antennae (Fig. 11A, B) very long.

Thorax. Pronotum (Fig. 11C) subrectangular, transverse (PW/PL, 1.53–1.64), widest anterior 1/3, postero-lateral angle around 90 degrees, posterior margin slightly sinuate, reddish yellow to reddish brown, surface finely covered with setae and punctures, gently polished and slightly reticulated. Elytra (Fig. 11C, D) distinctly widened posteriad entirely, posterior margins shallowly notched near lateral corners, reddish yellow to reddish brown, surface finely covered with setae and punctures;

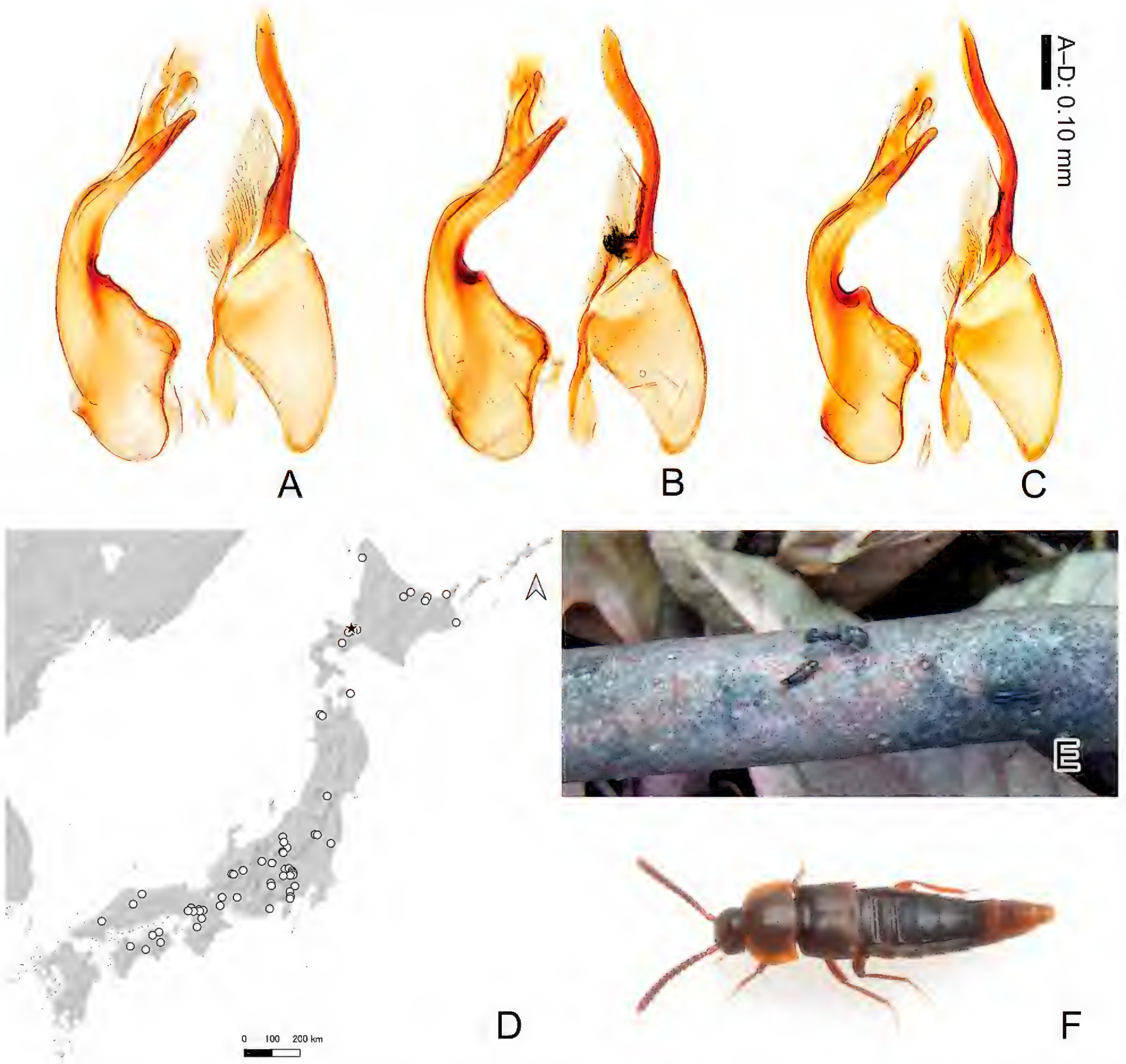

Figure 12. *Homoeusa longicornis* Sharp, 1888. **A–C.** Variations of aedeagi; **A.** Mt. Ishizuchi-san, Ehime-ken, Shikoku; **B.** Marusep-pu-chô, Hokkaido; **C.** Nakanojo-shi, Gunma-ken; **D.** Distribution map; black star – the type locality ("Sapporo"); white circles – collection data examined in this paper; **E.** A walking adult in a foraging trail of *Lasius* cf. *fuliginous* on a fallen branch, Iimori-toge, Saitama-ken, Honshu; **F.** Clear image of living adult from Aomori-ken.

gently polished and weakly reticulated. Hind wings developed. Mesoventral process (Fig. 11E) very narrow, with weak medial carina, forming Y-shaped, apex sharply pointed, reaching posterior 1/3 of mesocoxal cavities. Metaventral process weakly produced.

Abdomen elongate, narrowed posteriad; surface covered with short setae and each posterior margin with long stout setae; finely reticulated.

Male: Relative length of each antennal segment from first to 11th, 1.66: 1.13: 1.16: 1.07: 1.00: 1.04: 1.00: 1.06: 1.01: 1.13: 2.25. 8th sternite (Fig. 11F) weakly rounded at posterior margin; median lobe of aedeagus (Fig. 11H) slender, length about 0.63 mm, apical lobe elongated, ventral side slightly humped at middle, apex gently pointed in lateral view, apical valves simple and very long, without dorsal arms, basal part of the copulatory piece very small. Paramere (Fig. 11I) length about 0.79 mm; apical lobe of paramere extremely long, length over half of whole paramere, curved ventrally, dilated apicad, apex blade-shaped; four setae, a far longer than others, b located most apically, velum elongate, broad and produced apically.

Female: Relative length of each antennal segment from first to 11th, 2.37: 1.57: 1.29: 1.09: 1.06: 1.00: 1.06: 1.08: 1.17: 1.40: 2.88. 8th sternite (Fig. 11G) truncated or slightly rounded at posterior margin; spermatheca (Fig. 11J, K) S-shaped, apex of basal part not swollen, base largely hooklike.

Variation. Apical lobe of aedeagal median lobe varies on the degree of dorsally curve, intension of middle hump

ventral side, and depth of basal concave (Fig. 12A–C) independently of geographical locations.

Measurements (in mm) and ratios. Body parts (N = 12): BL ≈ 2.58–3.54; AL, 0.98–1.3; HW, 0.59–0.7; PL, 0.59–0.72; PW, 0.97–1.13; EL, 0.5–0.59; EW, 0.94–1.13; HTL, 0.65–0.8; PW/PL, 1.53–1.64; AL/PL, 1.5–1.91; HTL/PL, 0.98–1.13.

Differences between sexes: AL/PL (male, N = 5), 1.82–1.91; AL/PL (female, N = 7), 1.5–1.65; HTL/PL (male, N = 5), 1.05–1.13; HTL/PL (female, N = 7), 0.98–1.04.

Distribution. Japan (Hokkaido, Honshu, Shikoku) (Fig. 12D).

Symbiotic hosts. *Lasius fuliginosus* species group: *L.* cf. *fuliginosus*, *L. morisitai*, *L. nipponensis*, *L. orientalis*, *L. spathepus*.

Bionomics. *Homoeusa longicornis* can be observed in *Lasius fuliginosus* species group foraging trails on the forest floor from April to August (Fig. 12E). To the best of our knowledge, no individual was collected using FIT. The beetles were observed to be frequently raising the tip of their abdomen when approaching the host ant workers in the field and indoors.

Remarks. This species is rarely collected from the trails of *L. nipponensis* and *L. orientalis*. This species is very similar to *H. japonica* in terms of its habitus (Fig. 12F) and bionomics. *H. longicornis* tends to occur at higher altitudes than that of *H. japonica*. However, both species frequently co-occur at moderate altitudes in Honshu and Shikoku, even within the same colony of host ants. Precisely distinguishing between the two species is challenging without examining male genitalia. The pronotum length can be helpful; that of *H. longicornis* is usually longer than 0.65 mm, whereas that of *H. japonica* is shorter than 0.65 mm, but some exceptions remain in both species.

Homoeusa prolongata Sawada, 1970

Figs 3E, 13A–I, 14A–D

(Japanese name: Hirata-ariyadori)

Homoeusa prolongata Sawada, 1970b: 57, fig. 14 (original description); Schülke and Smetana 2015; 682 (catalogue); Maruyama et al. 2013: 26 (distribution and bionomics mentioned).

Type material. Not examined.

Additional material examined. Japan: Hokkaido • 2 exs.; Near Hime-numa, Oshidomariwannai (alt. 130 m), Rishiri-chô; 5.VI.2024; T. Yamauchi leg. (OUAVM) • 1 ex.; "Horokanai Butokamabetsu Riv" (alt. 300 m); 3. VIII.1991; A. Smetana leg. (NMST, ex A. Smetana coll.) • 1 ex.; Kanayama, Makoi, Shari-chô; 24.VI.2002; Y. Kida leg. (KUM) • 1♂, 1 ex.; Teine-yama [43.0836, 141.2024], Sapporo-shi; 23.V.2020; Y. Tasaku leg. (KUM) • 1♂; Ôsawaguchi, Nopporo-shizenkôen, Ebetsu-shi; 16–19.VI.2001; S. Hori leg. (KUM) • 2 exs.; Kannon-zawa, Sapporo-shi; 19.V.2021; Y. Tasaku leg. (KUM) • 2 exs.; Hakken-zan, Sapporo-shi; 1.VI.2002; M. Maruyama leg. (KUM) • 1♀; Mt. Kariba, Shiribeshi; 12.VI.1986; S. Nomura leg. (KUM). **Honshu: Aomori-ken** • 1 ex.; Iwaki river riverbed, Kawazura (alt. 10 m) [40.694, 140.455], Itayanagi-machi; 28.VI.2023; TS. Nozaki leg. LNS (KUM). **Iwate-ken** • 1♀, 1 ex.; Kitayama, Morioka-shi; 23.IV–3.V.2024; N. Nakaya leg. FIT (IPMM) • 1 ex.; Mt. Takabora, Kamiyonai, Morioka-shi; 21.IV–3.V.2024; N. Nakaya leg. FIT (IPMM). **Akita-ken** • 1 ex.; Kawara-bo, Mt. Hachimine, Hanamaki-shi; 22–24.VI.1980; S. Naomi leg. (KUM). **Fukushima-ken** • 1 ex.; Zenjin, Mt. Chokai, Yurihonjo-shi; 19–20.VI.1980; S. Naomi leg. (KUM) • 1 ex.; Yokomuki, Mt. Adatara, Inawashiro-machi; 10.VII.1985; S. Nomura leg. (KUM) • 1 ex.; Kozodaira, Hinoemata-mura; 26.VII.1996; S. Naomi leg. (KUM) • 2 exs.; Nanairi, Hinoemata-mura; 24.VII.1990; T. Kishimoto leg. (KUM). **Tochigi-ken** • 1 ex.; Mt. Nasu; 3.VI.1994; S. Naomi leg. (KUM) • 2 exs.; Chuzenji, Nikko-shi; 28–30.VI.1982; S. Naomi leg. (KUM) • 1 ex.; same locality; 24.VII.1985; S. Nomura leg. (KUM) • 1 ex.; "Nikko N.P. Lake Chuzenjiko" (alt. 1,280 m); "14.VII.80" [1980]; A. & Z. Smetana leg. (NMST, ex A. Smetana coll.) • 1 ex.; "Nikko N.P. Senjugahara" (alt. 1400 m); "15.VII.80" [1980]; A. & Z. Smetana leg. (KUM, ex A. Smetana coll.) • 1 ex.; Nagaishi Forest Road, Ashikaga-shi; 27.V.1990; H. Ohkawa leg. (KUM) • 1♂; Watarase-yûsuichi, Fujioka-machi; 16. IV.2000; H. Ôkawa leg. (KUM). **Gunma-ken** • 1 ex.; Mikuni-tôge, Minakami-machi; 27.VI.1997; S. Naomi leg. (KUM) • 1 ex.; Hôshi-onsen, Minakami-machi; 26. VI.1997; S. Naomi leg. (KUM) • 1 ex.; Amemi-rindou, Minakami-machi; 4.V.1998; Shiho Arai leg. (KUM) • 1♂, 1 ex.; Sakurayama, Fujioka-shi; 9.V.1998; Shiho Arai leg. (KUM) • 1 ex.; same locality; 22.V.1999; K. Toyoda leg. LNH (KUM) • 1♀, 3 exs.; same locality; 22.V.1999; Shiho Arai leg. LNH (KUM) • 1 ex.; same locality; 27.V.2000; Shiho Arai leg. LNH (KUM). **Saitama-ken** • 1 ex.; Mt. Jômine-san, Minano-machi; 29.V.1999; Shiho Arai leg. LNH (KUM) • 1 ex.; Chichibu-kôgen, Higashichichibu-mura; 5.V.2000; Shiho Arai leg. (KUM) • 1 ex.; Sugaya, Ranzan-machi; 14.VI.1994; K. Toyoda leg. LNH (KUM) • 1 ex.; same locality; 16.VI.1994; K. Toyoda leg. (KUM) • 1 ex.; Iwadono, Higashimatsuyama-shi; 3.V.2005; K. Toyoda leg. LNJ (KUM) • 1 ex.; Near Tsumasaka-Toge, Hanno-shi; 20.VI.1998; K. Toyoda leg. (KUM) • 1♂; Kawaura-keikoku (alt. 600 m), Chichibu-shi; 20.VI.1998; Shiho Arai leg. (KUM) • 1♀; same locality; 27.VI.1998; Shiho Arai leg. (KUM) • 1 ex.; Kaminaguri, Hanno-shi; 23.V.1998; Shiho Arai leg. LNH (KUM) • 1 ex.; Sumiyairi-rindô, Hanno-shi; 3.VI.2000; Shiho Arai leg. LNH (KUM). **Chiba-ken** • 2 exs.; Ashida (alt. 10 m), Narita-shi; 17–25.VII.2014; R Nakamura leg. FIT (KUM) • 11 exs.; Okuno, Ichihara-shi; 12–14. VII.2000; S. Hatsushiba & T. Shimada leg. (KUM) • 1 ex.; same locality; 16–18.V.2001; S. Hatsushiba & T. Shimada leg. (KUM) • 1 ex.; same locality; 12–14.V.2001; S. Hatsushiba & T. Shimada leg. (KUM) • 1 ex.; Mt. Gundari, Ichinomiya-machi; 12.IV.1997; S. Nomura leg. (KUM) • 1 ex.; Umegase, Daifuku-yama, Ichihara-shi;

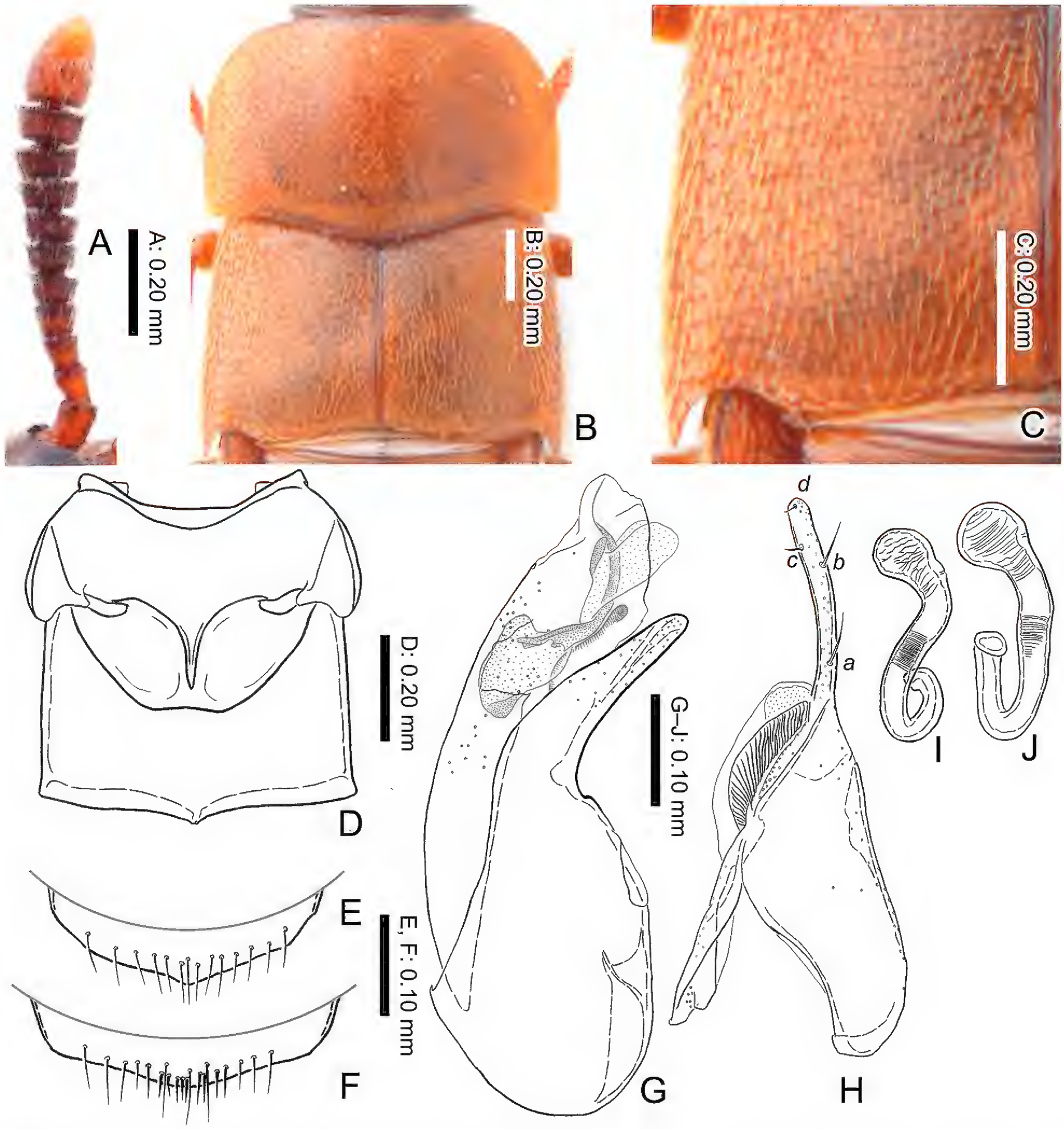

Figure 13. *Homoeusa prolongata* Sawada, 1970b. **A.** Antenna; **B.** Pronotum and elytra; **C.** Zoomed view of elytron; **D.** Meso- and metaventrite; **E, F.** Posterior margin of 8th sternite: **E.** Male; **F.** Female; **G.** Median lobe of aedeagus from lateral view; **H.** Paramere of aedeagus from lateral view; **I, J.** Spermatheca.

6.V.1998; S. Naomi leg. (KUM) • 1 ex.; Amatsu (alt. 70 m) [35.1406, 140.1512], Kamogawa-shi; 3.V.2016; S. Sejima leg. Litter (KUM). **Tokyo-to** • 1 ex.; Ônita, Ome-shi; 20.V.1991; T. Kishimoto leg. (KUM) • 1 ex.; Oyamada-chô, Machida-shi; 19.V.1992; T. Kishimoto leg. (KUM) • 1 ex.; Machida-shi; 28.V.1981; T. Niizato leg. (KUM). **Kanagawa-ken** • 3 exs.; Nanzawa, Tsukui, Sagamihara-shi; 6.V.1977; R. Kiryu leg. (SCM) • 1 ex.; Miyagase, Aikô; 19.IV.1977; R. Kiryu leg. (SCM) • 2 exs.; Kozukue, Yokohama-shi; 21.IV.1994; H. Sato leg. (KUM) • 1♂; Niiharutyô、Midori-ku [35.50, 139.51], Yokohama-shi; 25.IV.2012; O. Saitoh leg. (KPMNH) • 3 exs.; Trap St.1.Park / "Y.N.S", Yokohama-shi; 8.VI.1988; Y. Kominami leg. (SPMN) • 1 ex.; Yakunimi-yama [35.35, 139.17], Hadano-shi; 27.VI.2014; O. Saitoh leg. (KPMNH) • 1 ex.; Kinugasa, Yokosuka-shi; 26–27.IV.1995; S. Tsuboyama leg. (KUM). **Niigata-ken** • 1♂; Kita-ikari (alt. 760 m) [38.1500, 138.4049], Sado-shi; 18.VI.2023; TS. Nozaki leg. (KUM) • 3 exs.; Mt. Tadara-mine, Ryotsu (alt. 810 m) [38.13, 138.38]; Sado-shi; 11.VI.2012; M. Yoshida leg. (KUM) • 2 exs.; Yokoyama, Sado-shi; 24–25.V.1995; T. Kishimoto leg. (KUM) • 1 ex.; Kaikake-onsen, Yuzawa-machi; 23.VI.1996; K. Haga leg. Leaf litter in Beech forest (KUM) • 1 ex.; Sasaga-

mine, Myoko-shi; 14–15.VI.1980; S. Naomi leg. (KUM) • 1 ex.; Suginosawa (alt. 950 m) [36.8519, 138.1399], Myoko-shi; 3.VI.2018; S. Sejima leg. Litter (KUM). **Fukui-ken** • 1 ex.; Mt. Houonji-san, Katsuyama-shi; 31.V.1989; Kouichi Matsumoto leg. (KUM) • 1 ex.; Mt. Gongen, Echizen-shi; 22.V.1981; H. Sasaji leg. (KUM). **Yamanashi-ken** • 1♀; Daibosatsu-rei [35.73, 138.82], Koshu-shi; 9.VI.2019; O. Saitoh leg. (KPMNH) • 1 ex.; Ryomata-goya, Noro-gawa riv., Minami-alps-shi; 3.VIII.1996; K. Haga leg. Fallen branch (KUM) • 5♂♂, 1♀, 2 exs.; Karumizu-rindo (alt. 1600 m), Narusawa-mura; 22–29.VI.2011; T. Watanabe leg. FIT (KUM) • 1 ex.; same locality; 29.VI–6.VII.2011; T. Watanabe leg. FIT (KUM) • 1 ex.; same locality; 27.VI–4.VII.2012; T. Watanabe leg. FIT (KUM) • 1 ex.; same locality; 25.VII–1.VIII.2012; T. Watanabe leg. FIT (KUM) • 2 exs.; Subashiri-guchi, Fujisan (alt. 1,400 m), Oyama-chô; 15–20.V.2011; T. Watanabe leg. FIT (KUM) • 1 ex.; Subashiri, Fujisan 1-gome (alt. 1,400 m), Oyama-chô; 20–26.V.2011; T. Watanabe leg. FIT (KUM). **Nagano-ken** • 2 exs.; Shiga-kôgen (alt. 1,380 m) [36.728, 138.478], Yamanouchi-machi; 9.VII.2022; TS. Nozaki leg. Litter (KUM) • 1 ex.; same locality; 9.VII.2022; TS. Nozaki leg. LNH (KUM) • 1♂; Mizunashiike, Shiga-kôgen, Yamanouchi-machi; 9.VII.2022; TS. Nozaki leg. (KUM) • 1 ex.; Satoyamabe, Matsumoto-shi; 4.VI.2009; T. Komatsu leg. LNJ (KUM) • 1♂; Tobira, Matsumoto-shi; 5.VI.2011; M. Maruyama et al. leg. (KUM) • 1♀; Kohigashi, Chino-shi; 19.VI.2011; M. Maruyama et al. leg. (KUM) • 1♂; Kannon-daira, Yatsuga-take; 11.VII.2000; H. Hoshina leg. Beating (KUM). **Shizuoka-ken** • 1 ex.; Subashiri-guchi, Fujisan (alt. 1,400 m), Oyama-chô; 15–22.VI.2011; T. Watanabe leg. FIT (KUM) • 2 exs.; Hiekawa, Izu-shi; 2.VI.1983; T. Tahira leg. (KUM). **Kyoto-fu** • 1 ex.; Mt. Yôrô-san, Maizuru-shi; 25–26.V.2000; K. Mizuno leg. (KUM). **Hyogo-ken** • 1 ex.; Mt. Hyonosen; 5.VI.1984; S. Nomura leg. (KUM) • 1 ex.; Mt. Mimuro-yama; 7.VI.1997; H. Hoshina leg. (KUM). **Nara-ken** • 1 ex.; Nara; "11.VIII.80" [1980]; A. & Z. Smetana leg. (KUM, ex A. Smetana coll.) • 1 ex.; Nishitani, Yoshino-chô; 18–19.V.1995; Y. Nakahara leg. Bait trap (KUM) • 2 exs.; Mt. Nehan-dake (alt. 1,140 m), Shimokitayama-mura; 27.VI.1998; T. Kishimoto leg. (KUM). **Wakayama-ken** • 1 ex.; Hirai, Kozagawa-chô; 15.VIII.1999; M. Maruyama leg. LNJ (KUM) • 1 ex.; same locality; 16.VII.1999; M. Maruyama leg. LNN (KUM). **Tottori-ken** • 1 ex.; Hokidaisen, Daisen-chô; 3.VI.1980; S. Naomi leg. (KUM) • 3 exs.; Mt. Daisen, Daisen-chô; 3–5.VI.1980; S. Naomi leg. (KUM) • 2 exs.; Ônarubara-kôgen (alt. 770 m), Kôfu-chô; 18–24.V.2008; A. Watanabe leg. FIT (KUM) • 3 exs.; same locality; 7–23.VI.2008; A. Watanabe leg. FIT (KUM) • 1 ex.; same locality; 24.V–1.VI.2008; A. Watanabe leg. FIT (KUM). **Shimane-ken** • 1♀; Dangyô-no-taki, Dôgo Is., Okinoshima-chô; 5–16.VI.2008; T. Shimada leg. (KUM). **Okayama-ken** • 1 ex.; Kanehira, Bicchu-chô (alt. 300 m), Takahashi-shi; 22.V–2.VI.2010; A. Watanabe leg. FIT (KUM) • 1 ex.; same locality, Takahashi-shi; 2–19.VI.2010; A. Watanabe leg. FIT (KUM). **Hiroshima-ken** • 1♂; Mt. Tate-eboshi (alt. 1,180 m) [35.0527, 133.0696], Shobara-shi; 15.VI.2024; TS. Nozaki leg. (KUM) • 1 ex.; Kakezu-yama, Higashiyawatahara (alt. 850–1,126 m), Kitahiroshima-chô; 30.IV–9.V.2009; TA. Nozaki & Y. Nozaki leg. FIT (KUM) • 2 exs.; same locality; 9–18.V.2009; TA. Nozaki & Y. Nozaki leg. FIT (KUM) • 1 ex.; same locality; 30.V–13.VI.2009; TA. Nozaki & Y. Nozaki leg. FIT (KUM) • 5 exs.; same locality; 13–27.VI.2009; TA. Nozaki & Y. Nozaki leg. FIT (KUM) • 1 ex.; same locality; 27.VI–4.VII.2009; TA. Nozaki & Y. Nozaki leg. FIT (KUM) • 1♂, 1 ex.; same locality; 4–18.VII.2009; TA. Nozaki & Y. Nozaki leg. FIT (KUM). **Yamaguchi-ken** • 1 ex.; Nodani, Tokuji-chô; 21.IV.2004; Y. Fujitani leg. (KUM). **Shikoku: Tokushima-ken** • 1 ex.; Meoto-ike, Tsurugi-chô; 30.VI.2006; H. Fujimoto leg. (KUM). **Kagawa-ken** • 2 exs.; Nagara-dam, Ayakami-chô; 5.V.2003; S. Nagashima leg. in litter (KUM) • 2 exs.; Shôzaka, Sogisho-higashi, Ayagawa-chô; 9–12.IV.2009; H. Fujimoto leg. FIT (KUM) • 1 ex.; same locality; 12–18.IV.2009; H. Fujimoto leg. FIT (KUM) • 1 ex.; same locality; 22–30.V.2009; H. Fujimoto leg. FIT (KUM) • 1 ex.; same locality; 25.IV–2.V.2010; H. Fujimoto leg. FIT (KUM). **Kochi-ken** • 1 ex.; Mt. Tsutsujô-zan (alt. 1,600 m), Ino-chô; 30.VI.2007; TA. (Takasuke) Miyata & TO. (Toshie) Miyata leg. (KUM) • 1 ex.; Ekawa, Nishitosa (alt. 120 m) [33.217, 131.784], Shimanto-shi; 12.V.2023; TS. Nozaki leg. (KUM). **Kyushu: Fukuoka-ken** • 1♂; Mt. Inunaki, Miyawaka-shi; 22.V.1980; T. Gotô leg. (KUM) • 1 ex.; Mt. Tachibana; 1.VI.1978; K. Yamagishi leg. (KUM) • 1 ex.; same locality; 5.V.1979; K. Yamagishi leg. (KUM) • 6 exs.; same locality; 10–14.V.1996; T. Ueno, Y. Higashiura & H. Goto leg. FIT (cSch) • 4 exs.; same locality; 15–17.V.1996; T. Ueno & H. Goto leg. FIT (cSch) • 1♀, 2 exs.; Mt. Shiouji-yama, Onojo-shi; 8.V.2013; K. Kido leg. FIT (KUM) • 1 ex.; same locality; 12.V.2013; K. Kido leg. FIT (KUM) • 1 ex.; same locality; 18.V.2013; K. Kido leg. FIT (KUM) • 2 exs.; Mt. Hikosan; 13.VI.1966; K. Takeno leg. (KUM) • 1♂, 1♀, 4 exs.; Seinen-no-ie, Hikosan (alt. 800 m), Soeda-machi; 22.V.2011; M. Maruyama & T. Kanao leg. LNJ (KUM) • 2 exs.; Kusenbu-yama; 24.V.2014; K. Kido leg. FIT (KUM) • 1 ex.; Mt. Miyomizu-yama, Miyama-shi; 16.V.1997; T. Ishikawa leg. (KUM). **Saga-ken** • 1♂; Mt. Ten-zan (alt. 1040 m) [33.339, 130.143], Karatsu-shi; 29.VI.2022; S.T. Inoue & Y. Hisasue leg. LNJ (KUM) • 1 ex.; Mt. Tenzan (alt. 1,000 m) [33.340, 130.142], Saga-shi; 18.VI.2022; Y. Hisasue leg. (KUM) • 2 exs.; Kurinoki-tôge, Mt. Kunimi-yama; 15.V.2019; M. Nishida leg. FIT (KUM) • 1 ex.; Mt. Kurokami-yama, Arita-chô; 18.V.2018; M. Nishida leg. FIT (KUM) • 2 exs.; Mt. Mifune, Takeo-shi; 27.V.1984; S. Naomi leg. (KUM) • 1 ex.; Tosen-zan (alt. 350 m), Ureshino-shi; 19.V.1997; S. Nomura leg. (KUM) • 1 ex.; Tosen-zan, Ureshino-shi; 20.V.2018; M. Nishida leg. FIT (KUM) • 2 exs.; Mt. Tara, Tara-chô; 29.IV.1985; S. Naomi leg. (KUM). **Nagasaki-ken** • 1♀; Mt. Mitake, Tsushima Is., Tsushima-shi; 31.V.1988; S. Nomura leg. (KUM)

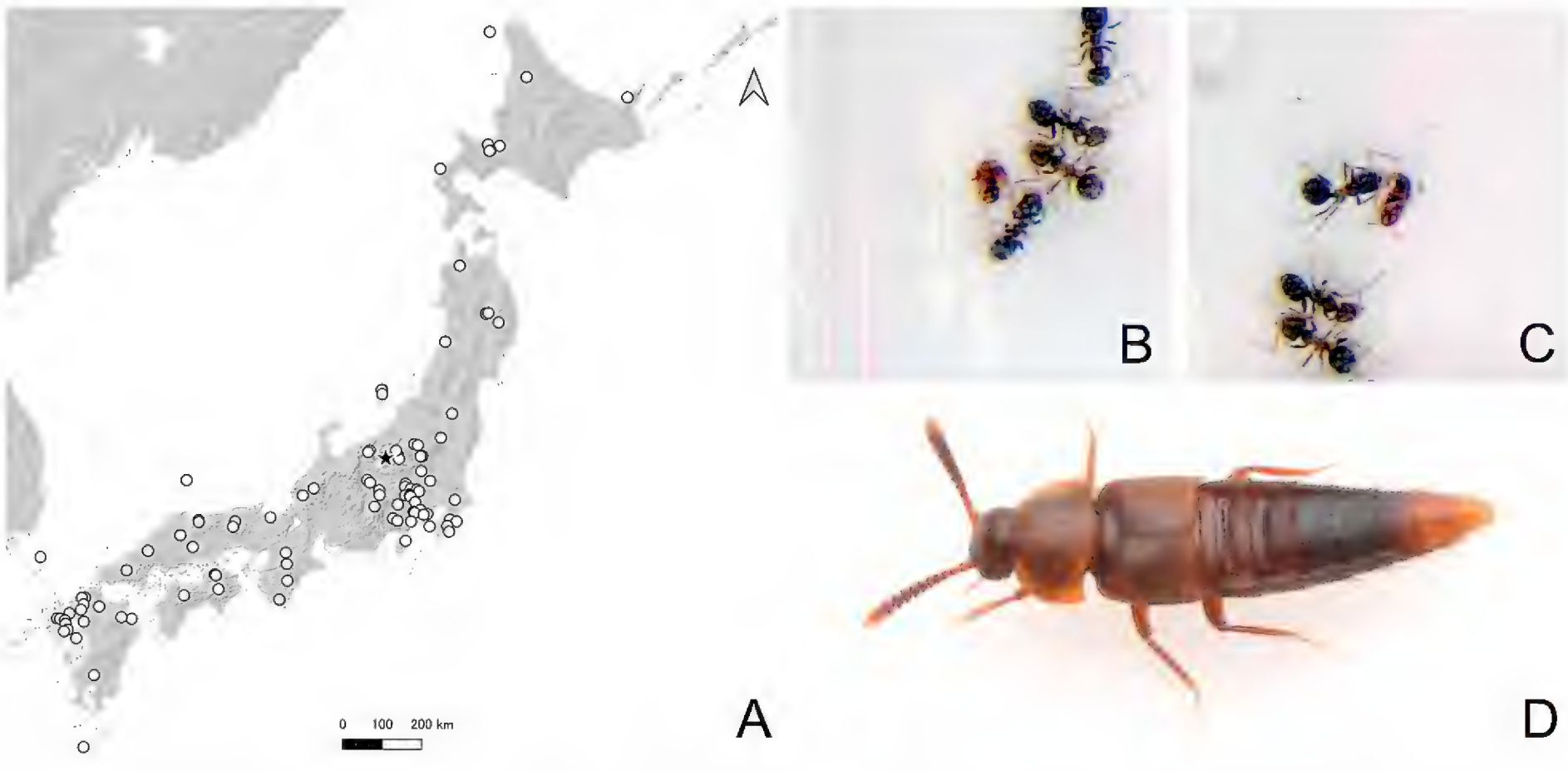

Figure 14. *Homoeusa prolongata* Sawada, 1970b. **A.** Distribution map; black star – the type locality ("Shiga Hights"); white circles – collection data examined in this paper; **B, C.** Snapped images from videos shot indoors, adults raising abdomen to an ant; **D.** Clear image of a living adult from Nagano-ken.

• 2 exs.; Tanuki-no-o, Ômura-shi; 8.V.2019; M. Nishida leg. FIT (KUM) • 1 ex.; Mt. Yake, Shimabara-shi; 21. IV.1977; Imasaka leg. (KUM). **Oita-ken** • 1 ex.; Mt. Takasaki-yama, Beppu-shi; 9.V.2013; T. Miyake leg. FIT (KUM). **Kagoshima-ken** • 1 ex.; Mt. Kurinodake, Kurino-chô; 29.VI.1995; S. Onoda leg. (SPMN) • 1♂; Nageishidaira, Yakushima Is. (alt. 1,825 m) [30.322, 130.512], Yakushima-chô; 18.VIII.2021; S. Inoue leg. (KUM).

Diagnosis. This species is distinguished from other species of the genus by the following combination of characteristics: a slightly produced metaventral process (Fig. 13D), median lobe of aedeagus bulbous with a length of approximately 0.47 mm (Fig. 13G). This species is similar to *H. ovata* and *H. japonica*, but it can be distinguished by a more flattened and semicircular pronotum, less produced metaventral process, and a bulbous median lobe of the male aedeagus.

Redescription. ***Body*** (Figs 3E, 14D) small, broad, somewhat limuloid; dorsal surface mostly moderately polished.

Head large; color yellowish brown to dark brown; eyes large. Antennae (Fig. 13A) short; relative length of each antennal segment from first to 11th, 2.39: 1.78: 1.14: 1.17: 1.00: 1.01: 1.10: 1.15: 1.20: 1.45: 3.94.

Thorax. Pronotum (Fig. 13B) semicircular, transverse (PW/PL, 1.51–1.65), widest at posterior 1/3, postero-lateral angle acute to around 90 degrees, posterior margin slightly sinuate, yellowish brown to dark brown, surface finely covered with setae and punctures, gently polished and slightly reticulated. Elytra (Fig. 13B, C) slightly widened posteriad, widest at posterior 1/3, then narrowed roundly, posterior margins deeply notched near lateral corners, yellowish brown to dark brown, surface finely covered with setae and punctures; gently polished and weakly reticulated.

Hind wings developed. Mesoventral process (Fig. 13D) very narrow, with indistinct medial carina, apex sharply pointed, reaching almost anterior margin of mesocoxal cavities. Metaventral process slightly produced.

Abdomen elongate, narrowed posteriad; surface sparsely covered with short setae and each posterior margin with long stout setae; finely reticulated.

Male: 8th sternite (Fig. 13E) weakly produced and angled at postero-medial margin; median lobe of aedeagus (Fig. 13G) bulbous, length about 0.47 mm, apical lobe short and slightly curved ventrally, apex round in lateral view, apical valves elongate and mitten-shaped, dorsal arms short, basal part of copulatory piece large. Paramere (Fig. 13H) length about 0.47 mm; apical lobe of paramere long, length about 1/3 of whole paramere, curved ventrally; four setae, normally arranged, *b* located a bit more basally than *c*, velum small.

Female: 8th sternite (Fig. 13F) weakly produced roundly postero-medial margin; spermatheca (Figs 13I, J) S- or C-shaped, apex of basal part slightly sinuate, base largely hooklike.

Variation. Intraspecies variations are recognized in the apical lobe of the aedeagal median lobe. Some individuals have a small hump at the base of the ventral side and a slightly deeper basal concave. The length of the parameral apical lobe also varies slightly.

Measurements (in mm) and ratios. Body parts (N = 13): BL ≈ 1.9–2.78; AL, 0.67–0.81; HW, 0.43–0.52; PL, 0.46–0.61; PW, 0.73–0.92; EL, 0.37–0.51; EW, 0.73–0.98; HTL, 0.4–0.48; PW/PL, 1.51–1.65; AL/PL, 1.22–1.53; HTL/PL, 0.8–0.9.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu) (Fig. 14A).

Symbiotic hosts. *Lasius niger* species group: *L. hayashi*, *L. japonicus*, *L. sakagamii*, *L. productus*.

Bionomics. This species was collected from the nests of host ants under stones and in decaying wood and leaf litter near the entrances to these colonies from April to August. Many individuals were collected using FIT (N = 69). Bait traps set near the nest entrances were also effective in collecting *H. prolongata*. During indoor observations, *H. prolongata* was frequently observed, raising the tip of its abdomen toward approaching host ant workers, and sometimes just stopping (Fig. 14B, C).

Remarks. The type specimens are currently not available. Sawada (1970a, 1970b) described 25 aleocharine species from Shiga Heights, Nagano Prefecture, Honshu, including *H. prolongata*. According to Takuto Hashizume, who specializes in the taxonomy of homalotines and their relatives, he could not access these type specimens by contacting the National Museum of Nature and Science, Tsukuba ("National Science Museum Tokyo"), which is designated in papers as a deposit, or by searching the Osaka Museum of Natural History, Osaka, Japan. However, the original descriptions and drawings of *H. prolongata* are sufficiently informative for species-level taxonomy. Therefore, we conclude that a neotype designation is not necessary currently.

Maruyama et al. (2013) reported that some individuals similar to *H. prolongata* were found in trails of the *Lasius fuliginosus* group. However, we did not find any specimens of *H. prolongata* mounted together with *L. fuliginosus*. *H. ovata* may have been misrecognized as *H. prolongata* because some individuals of *H. ovata* resemble *H. prolongata* in terms of body size and general habitus.

Homoeusa gigantea Nozaki & Maruyama, sp. nov.

https://zoobank.org/124F8B44-AD0B-4159-908C-483796557467

Figs 3F, 15A–I, 16A–E

(Japanese name: Ô-hirata-ariyadori)

"*Oxypodini*? sp.1": Nishida 2019: 135, fig. 10 (recorded from Saga pref.).

Material examined. ***Holotype*** (Fig. 3F) • 1♂; "[Japan]: Fukuoka-ken, Soeda- " / "machi, Mt. Hikosan, Takasubaru" / "[33.4883, 130.9174], alt. 770" / "m, 24.VII.2022, Tsubasa"/ " NOZAKI leg. LCH01." / "添田町英彦山鷹巣原" // "*Lasius*" / "*umbratus* (Nylander, 1846)" / "アメイロケアリ" / det. Tsubasa NOZAKI 2025" (KUM).

Paratype. **Japan: Hokkaido** • 1♀; Makoi, Shari-chô; 28.V.2000; Y. Kida leg. LUM (KUM) • 2♀♀; Tôro lakeside, Shibecha-chô; 28.VII.1986; S. Nomura leg. (KUM) • 2♀♀; Nopporo, Ebetsu-shi; 13–21.VI.2000; Shigehisa Hori leg. (KUM) • 1 ex.; Minaminosawa, Sapporo-shi; 16–23.V.2023; Y. Tasaku leg. FIT (HUM) • 1 ex.; Hakken-zan, Sapporo-shi; 31.V.2002; M. Maruyama leg. (KUM) • 1♂; same locality; 20.VII.2022; TS. Nozaki leg. LUU (KUM) • 1 ex.; Obihiro-no-mori (alt. 78 m) [42.8987, 143.1439], Obihiro-shi; 15.VII.2022; TS. Nozaki & H. Nozaki leg. LUU (KUM) • 1 ex.; Higashi-ônura, Nanae-chô; 16.VI.1986; S. Nomura leg. (KUM). **Honshu: Iwate-ken** • 1♂, 1 ex.; Kitayama-sansakuro, Morioka-shi; 2.V.2020; N. Nakaya leg. LUU (IPMM) • 1 ex.; Kitayama, Morioka-shi; 23.IV–3.V.2024; N. Nakaya leg. FIT (IPMM) • 1 ex.; Mt. Takabora, Kamiyonai, Morioka-shi; 3.V.2024; N. Nakaya leg. FIT (IPMM). **Gunma-ken** • 1 ex.; Yubisogawa, Minakami-machi; 18.VI.2004; M. Yasaka leg. (KUM). **Nagano-ken** • 2 exs.; Odairahara, Horigane (alt. 1,100 m), Azumino-shi; 12.VII.1998; M. Maruyama leg. LUU (KUM) • 1 ex.; Fujii, Satoyamabe [36.2513, 137.3436], Matsumoto-shi; 13.V.2021; S.T. Inoue leg. LUU (KUM) • 1 ex.; Iriyamabe, Matsumoto-shi; 30.VI.2012; M. Maruyama leg. LUU (KUM) • 1 ex.; Fujimi (alt. 1,510 m) [35.904, 138.190], Fujimi-chô; 4.VI.2023; TS. Nozaki leg. LUM (KUM). **Gifu-ken** • 1♀; Nabedaira-kôgen, Takayama-shi; 6.VII.2022; TS. Nozaki leg. LUM (KUM) • 2♂♂, 1♀; Nakao (alt. 1,200 m), Takayama-shi; 5.VI.2005; K. Kinomura leg. LUM (KUM) • 1 ex.; Iwai (alt. 830 m) [36.1320, 137.3436], Takayama-shi; 7.VII.2022; TS. Nozaki leg. LUM (KUM) • 1 ex.; Iwase (alt. 850 m), Takayama-shi; 5.V.2005; K. Kinomura leg. LUU (KUM) • 1 ex.; same locality; 4.VI.2006; K. Kinomura leg. LUU (KUM). **Nara-ken** • 1♂; Wasamata-yama (alt. 1,140 m) [34.2184, 135.9862], Kamikitayama-mura; 14.VI.2023; TS. Nozaki leg. LUM (KUM). **Okayama-ken** • 1 ex.; Jabuchi-no-taki, Mt. Nagi-san (alt. 579 m) [35.1567, 134.1908]; Nagi-chô; 15.V.2022; Y. Senda leg. (EUMJ). **Hiroshima-ken** • 1 ex.; Kakezu-yama, Higashiyawatahara (alt. 850–1,126 m), Kitahiroshima-chô; 27.VI–4.VII.2009; TA (Tatsuya). Nozaki & Yoko Nozaki leg. FIT (KUM). **Shikoku: Kochi-ken** • 1 ex.; Irazu-keikoku, Tsuno-chô; 14.V.2005; TA. Miyata & TO. Miyata leg. (KUM). **Kyushu: Fukuoka-ken** • 2 exs.; Takasubaru, Mt. Hikosan [33.4883, 130.9174], Soeda-machi; 18.VI.2021; TS. Nozaki leg. LUU (KUM) • 1♀, 1 ex.; same locality; 26.VI.2021; TS. Nozaki leg. LUM (KUM) • 2♂♂; Biol. Lab. KU, Hikosan, (alt. 750 m) [33.4806, 130.9090], Soeda-machi; 26.V.2021; TS. Nozaki leg. LUU (KUM) • 1 ex.; Zuibai-ji, Itoshima-shi; 8.V.2021; T. Hashizume leg. (KUM) • 3 exs.; Mt. Shaka-dake, Kitayabe, Yame-shi; 18.V.2017; S. Imasaka leg. FIT (KUM). **Saga-ken** • 1 ex.; Kurokami-yama, Arita-chô; 27.IV.2018; M. Nishida leg. FIT (KUM) • 1 ex.; same locality; 9.V.2018; M. Nishida leg. FIT (KUM). **Kumamoto-ken** • 1♂; Momiki (alt. 890 m) [32.494, 130.988], Yatsushiro-shi; 24.V.2023; TS. Nozaki leg. LUM (KUM) • 1♀; Mt. Shiratomi-yama [33.4883, 130.9174], Yatsushiro-shi; 3.V.2022; Y. Uehara leg. (KUM). **Oita-ken** • 1♀, 3 exs.; Mt. Sobo; 17.V.1986; S. Nomura leg. (KUM) • 1 ex.; Tsukahara, Yufu-shi; 16.V.2014; T. Hada leg. (KUM).

Diagnosis. This species is distinguished from other species of the genus by the following combination of characteristics: pronotal posterolateral angle distinctly acute (Fig. 15B); elytra distinctly widened posteriad entirely (Fig. 15B, C); metaventral process slightly produced (Fig. 15D); median lobe of aedeagus bulbous, length approximately 0.63 mm (Fig. 15G). The appearance of this species is similar to *H. laevigata* and *H. prolongata*, but it can be distinguished from *H. laevigata* by

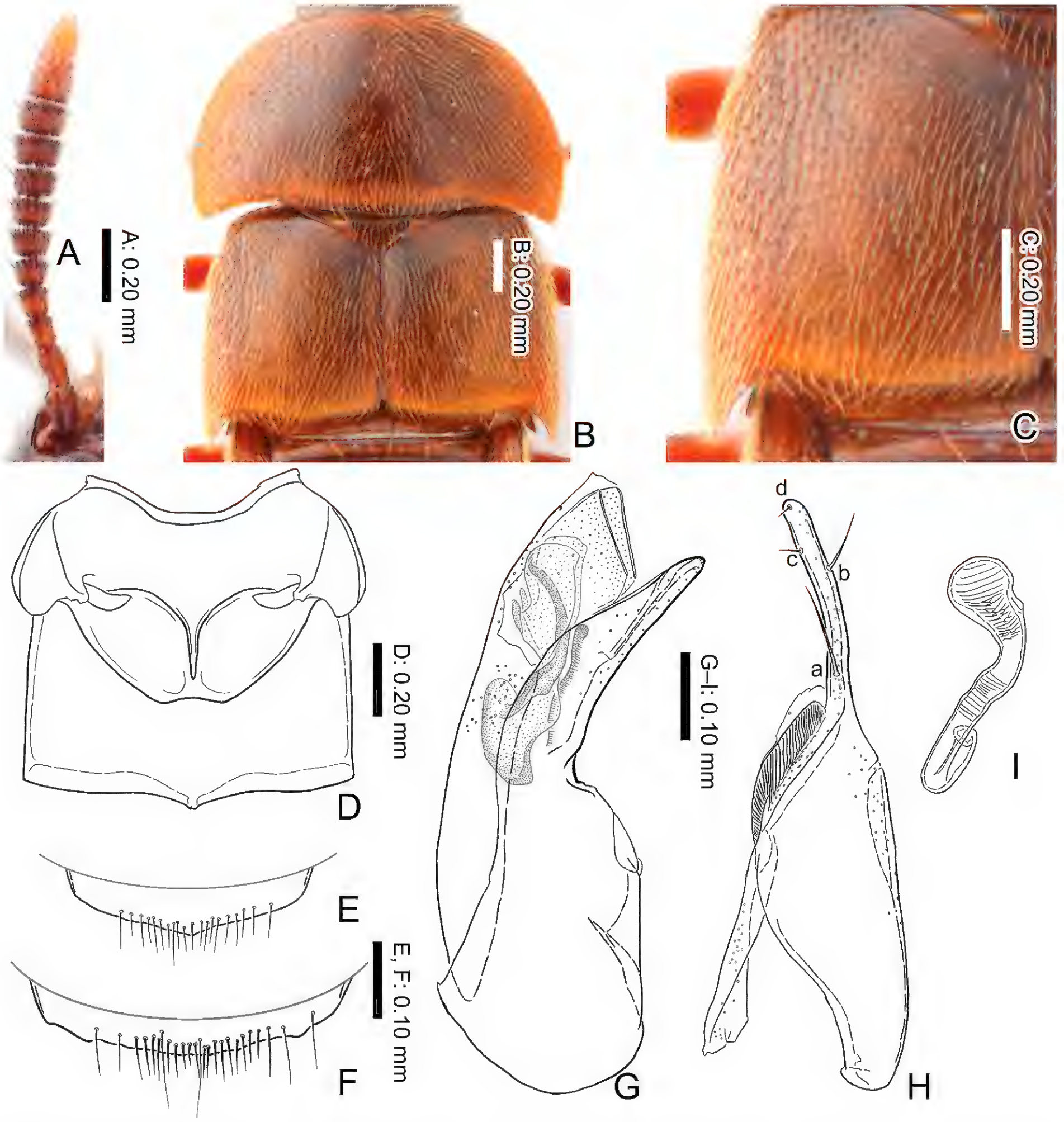

Figure 15. *Homoeusa gigantea* sp. nov. **A.** Antenna; **B.** Pronotum and elytra; **C.** Zoomed view of elytron; **D.** Meso- and metaventrite; **E, F.** Posterior margin of 8th sternite: **E.** Male; **F.** Female; **G.** Median lobe of aedeagus from lateral view; **H.** Paramere of aedeagus from lateral view; **I.** Spermatheca.

its normal long setae of pronotum and elytra, and from *H. prolongata* by its larger body, aedeagus, and distinct acute posterolateral angle.

Description. ***Body*** (Figs 3F, 16E) large, broad, somewhat limuloid; dorsal surface mostly moderately polished.

Head small; color yellowish brown to brown; eyes small. Antennae (Fig. 15A) short, relative length of each antennal segment from first to 11th, 2.91: 2.25: 1.66: 1.27: 1.18: 1.2: 1.23: 1.18: 1.00: 1.45: 4.93.

Thorax. Pronotum (Fig. 15B) semicircular, transverse (PW/PL, 1.62–1.80), widest at posterior 1/3, postero-lateral angle distinctly acute, posterior margin distinctly sinuate, yellowish brown to brown, sometimes slightly transparent, surface finely covered with long setae and punctures, gently polished and slightly reticulated. Elytra (Fig. 15B, C) distinctly widened posteriad entirely, posterior margins deeply notched near lateral corners, yellowish brown to brown, surface finely covered with long setae and punctures; gently polished and weakly reticulated. Hind wings developed. Mesoventral process (Fig. 15D) very narrow, with indistinct medial carina, apex sharply pointed, reaching almost anterior margin of metaventrite. Metaventral process slightly produced (Fig. 15D).

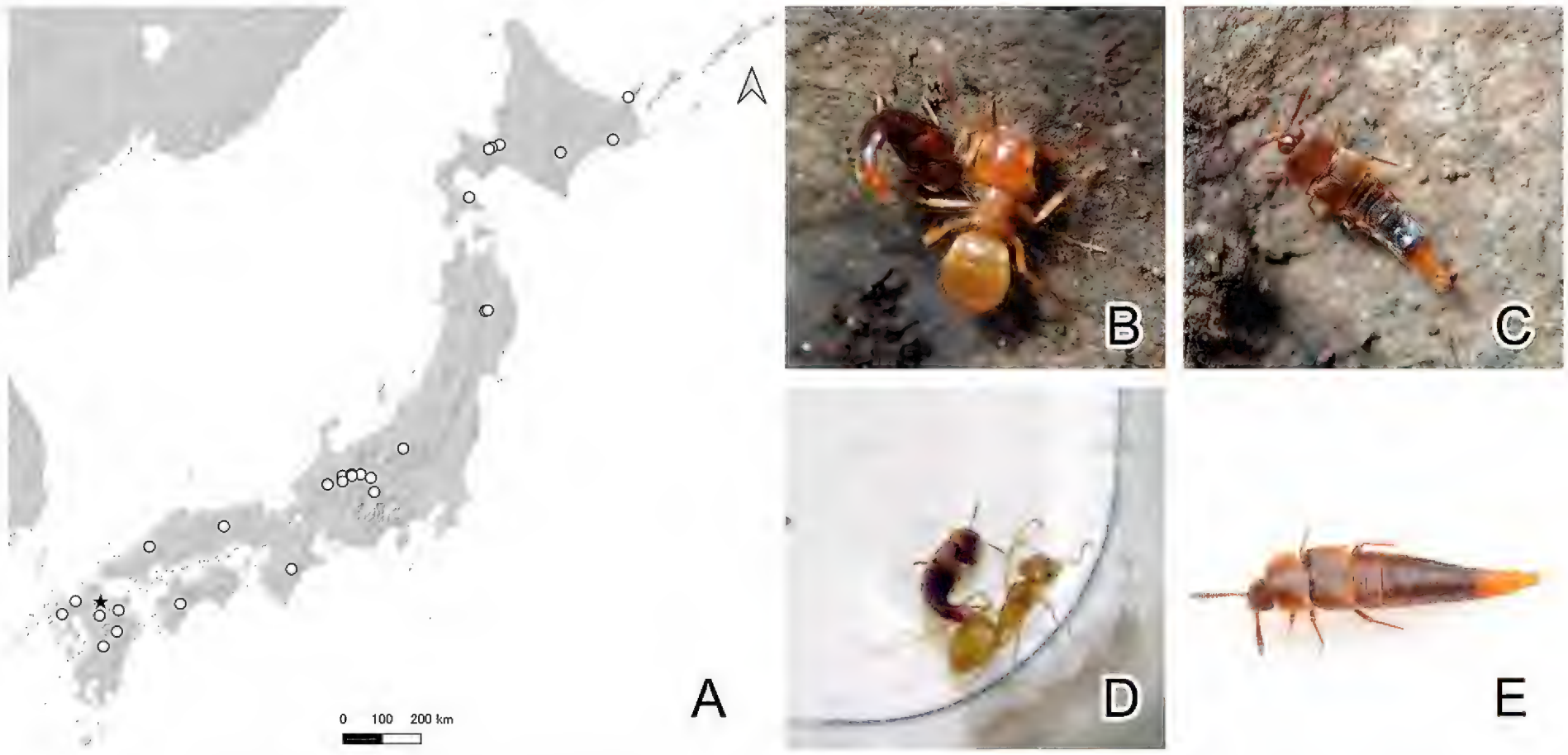

Figure 16. *Homoeusa gigantea* sp. nov. **A.** Distribution map; black star – the type locality; white circles – collection data examined in this paper; **B, C.** Living adult in a foraging trail of *Lasius umbratus* under a stone, Morioka-shi, Iwate-ken, Honshu (photographed by Naoya Nakaya); **D.** Snapped images from videos shot indoors, adults rubbing abdomen against a host ant worker; **E.** Clear image of a living adult from Nagano-ken.

Abdomen elongate, remarkably narrowed posteriad; surface sparsely covered with short setae and each posterior margin with long stout setae; weakly reticulated.

Male: 8th sternite (Fig. 15E) weakly produced and angled at postero-medial margin; median lobe of aedeagus (Fig. 15G) bulbous, length about 0.63 mm, apical lobe elogate and slightly curved ventrally, apex round in lateral view, apical valves elongate and mitten-shaped, dorsal arms short, basal part of copulatory piece large. Paramere (Fig. 15H) length about 0.63 mm; apical lobe of paramere long, length about 1/3 of whole paramere, curved ventrally; four setae, *b* located more basally than *c*; velum small.

Female: 8th sternite (Fig. 15F) weakly produced roundly postero-medial margin; spermatheca (Fig. 15I) S-shaped, apex of basal part slightly sinuate, base largely hooklike.

Variation. Intraspecies variations were recognized in the apical lobe of the aedeagal median lobe. Some individuals have a small hump at the base of the ventral side and a slightly deeper basal concave. The length of the parameral apical lobe also varies slightly.

Measurements (in mm) and ratios. Body parts (N = 10): BL ≈ 2.48–4.3; AL, 0.92–1.15; HW, 0.55–0.64; PL, 0.67–0.83; PW, 1.09–1.39; EL, 0.51–0.62; EW, 1.06–1.34; HTL, 0.61–0.75; PW/PL, 1.62–1.80; AL/PL, 1.22–1.46; HTL/PL, 0.89–1.02.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu) (Fig. 16A).

Symbiotic hosts. *Lasius umbratus* species group: *L. umbratus*, *L. meridionalis*.

Bionomics. *Homoeusa gigantea* sp. nov. is rarely observed in host ants' trails under stones or soil from April to July (Fig. 16B, C). Some individuals were collected by FIT (N = 15). Setting baits near the ants' foraging trails under stones (like Fig. 1C) is effective for collecting *H. gigantea* sp. nov. During indoor observations, they frequently and proactively rubbed their abdomen against body of their host ant workers (Fig. 16B, D), unlike any other species of this genus.

Remarks. Not many specimens were collected from foraging trails without bait. This might be because of the foraging behavior of the host ant species, *Lasius umbratus* and *L. meridionalis*. Both species are members of the *Lasius umbratus* group (formerly called the subgenus *Chthonolasius* Ruzsky, 1912) considered to forage mainly underground (Donisthorpe 1927; Collingwood 1979; Seifert 1988). We also observed these *Lasius* species forming trails under stones or inside litter. Given this, we believe that they tend to forage mainly underground. To find *Homoeusa gigantea* sp. nov. in these trails naturally, first, a collector needs to find the trail. At the same time, the beetle must pass through the right stone on the long path all over the underground region. This is why a bait trap is effective. It can attract many ant workers and beetles under a particular stone. TN collected multiple individuals per bait set under a stone, suggesting that the species may potentially be more common than expected in their foraging trails.

Etymology. The specific name is derived from the Latin adjective, which means "huge" and refers to the large size of this new species.

Homoeusa brevitarsis Nozaki & Maruyama, sp. nov.

https://zoobank.org/54327FAB-6A7C-4D65-BDE2-4E3BDBB6164E

Figs 3G, 17A–L, 18

(Japanese name: Nise-yamato-hirata-ariyadori)

Material examined. ***Holotype*** • 1♂; "Nipppon: Honshû / Wakayama-ken / Minabegawa-mura / 17.VII. 1999 (banana t) / leg. Maruyama-M." (KUM).

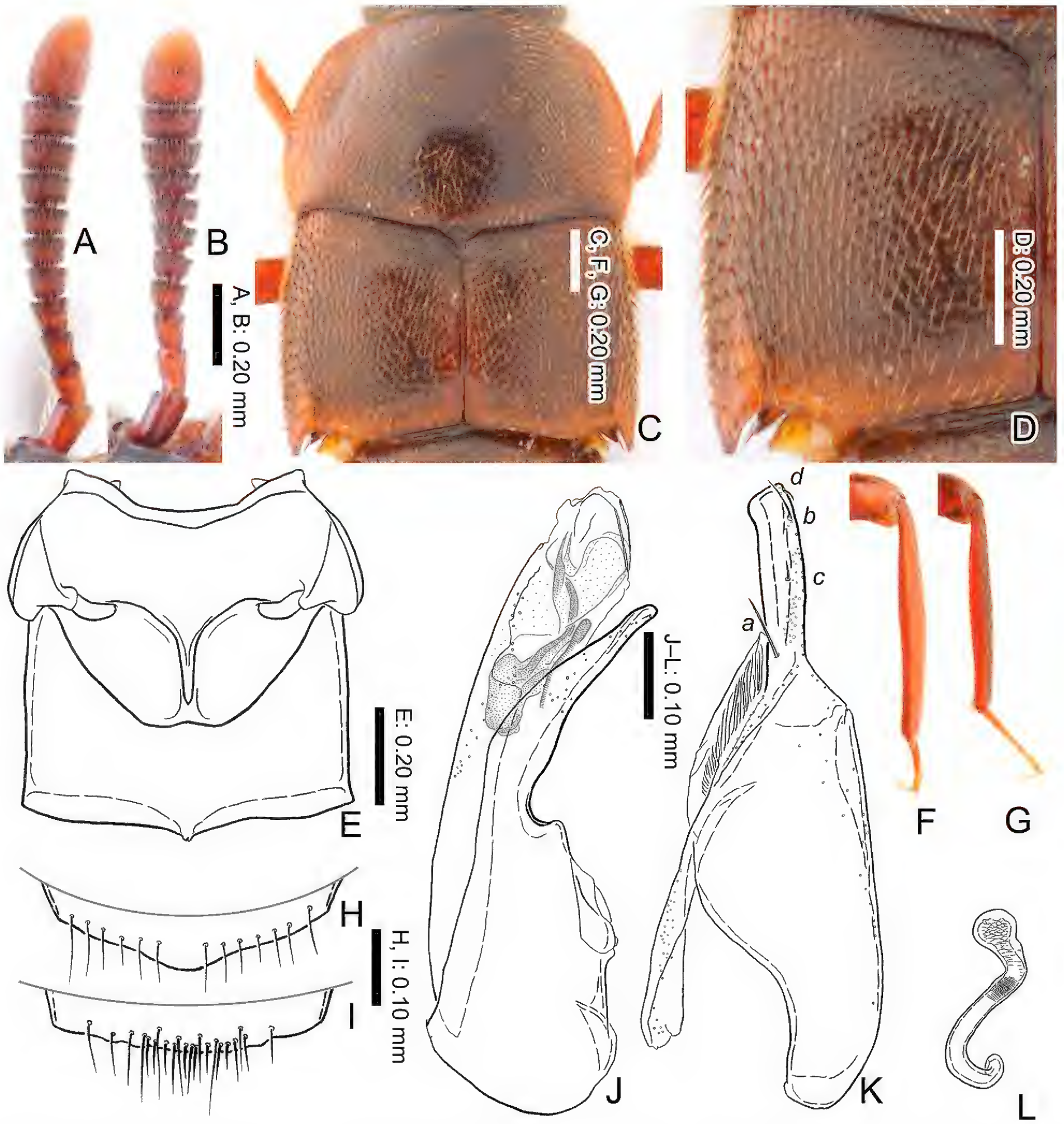

Figure 17. *Homoeusa brevitarsis* sp. nov. **A, B.** Antenna; **A.** Male; **B.** Female; **C.** Pronotum and elytra; **D.** Zoomed view of elytron; **E.** Meso- and metaventrite; **F, G.** Hind tibia and meta-tarsus; **F.** Male; **G.** Female; **H, I.** Posterior margin of 8th sternite; **H.** Male; **G.** Female; **J.** Median lobe of aedeagus from lateral view; **K.** Paramere of aedeagus from lateral view; **L.** Spermatheca.

Paratypes. **Japan: Honshu; Wakayama-ken** • 1♂; Kimitoge Pass, Hashimoto-shi; 6.VII.2014; T. Ito leg. (OMNH) • 1♀; same locality; 9.VII.2008; T. Ito leg. (OMNH) • 1 ex.; Tsuchibotoke-tôge, Iwade-shi; 10.V.2019; I. Matoba leg. (OMNH) • 1♀; same data as holotype (KUM) • 2♂♂, 3♀♀; Nishihara (alt. 180 m) [33.781, 135.413], Hidakagawa-chô; 11.VI.2023; TS. Nozaki leg. LFS (KUM).

Diagnosis. This species is distinguished from other species of the genus by the following combination of characteristics: pronotal postero-lateral angle around 90 degrees (Fig. 17C); metatarsi shorter than half of metatibiae (Fig. 17F, G); apical lobe of paramere short, broad, and almost straight, length about 1/4 of whole paramere, apex distinctly truncate (Fig. 17K). This species is similar to *H. japonica* and *H. prolongata* in general appearance, but it can be distinguished from these two species by its very short metatarsi and truncate apex of the parameral apical lobe.

Description. ***Body*** (Fig. 3G) small, broad; dorsal surface mostly moderately polished.

Head large; color brown; eyes small. Antennae (Fig. 17A, B) short relative length of each antennal segment from first to 11th, 2.48: 1.96: 1.39: 1.22: 1.04: 1.09: 1.00: 1.15: 1.15: 1.37: 3.26.

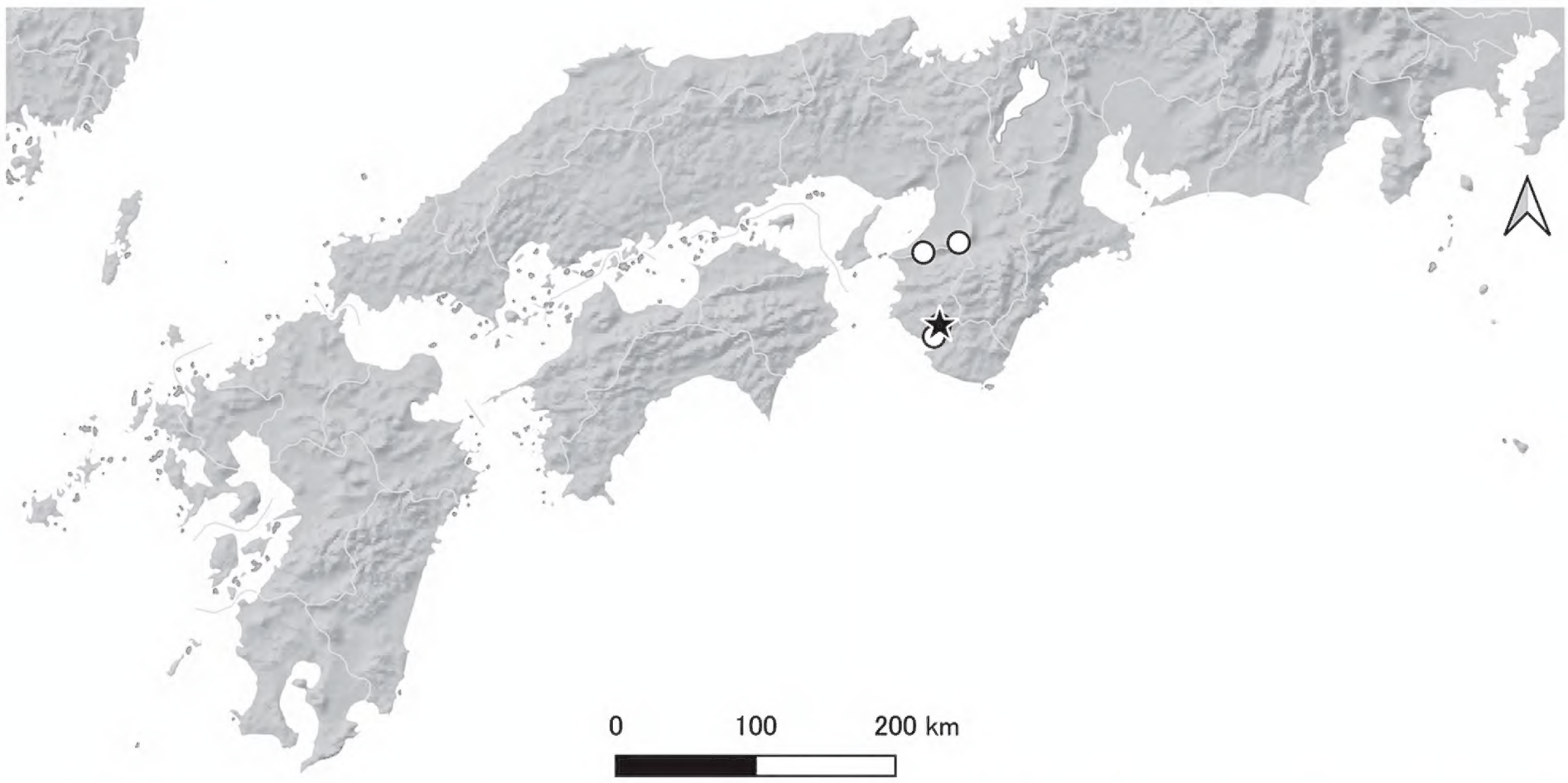

Figure 18. *Homoeusa brevitarsis* sp. nov., distribution map; black star – the type locality; white circles – collection data examined in this paper.

Thorax. Pronotum (Fig. 17C) subrectangular, transverse (PW/PL, 1.56–1.66), widest near middle, postero-lateral angle around 90 degrees, posterior margin slightly sinuate, reddish brown, surface finely covered with setae and punctures, gently polished and slightly reticulated. Elytra (Fig. 17C, D) slightly widened posteriad, widest at middle, then narrowed roundly, posterior margins deeply notched near lateral corners, reddish brown, surface finely covered with setae and punctures; gently polished and finely reticulated. Hind wings developed. Mesoventral process (Fig. 17E) very narrow, with weak medial carina, forming Y-shaped, apex pointed, reaching posterior 1/3 of mesocoxal cavities. Metaventral process slightly produced.

Abdomen elongate, narrowed posteriad; surface covered with short setae and each posterior margin with long stout setae; finely reticulated.

Male: Metatarsi (Fig. 17F) as long as 1/3 of hind tibia. 8th sternite (Fig. 17H) produced roundly at postero-medial margin; median lobe of aedeagus (Fig. 17J) slender, length about 0.61 mm, apical lobe narrow, slightly curved ventrally, apex gently pointed in lateral view, apical valves elongate and mitten-shaped, dorsal arms long and sharpened apically, basal part of copulatory piece small. Paramere (Fig. 17K) length about 0.73 mm; apical lobe of paramere short and broad, length about 1/4 of whole paramere, almost straight, apex distinctly truncate; four setae, *b* located subapically, *c* irregularly located more dorsally; velum elongate and narrow.

Female: Metatarsi (Fig. 17G) slightly shorter than half of metatibia. 8th sternite (Fig. 17I) slightly rounded posterior margin; spermatheca (Fig. 17L) apex of basal part slightly swollen, base largely hooklike.

Measurements (in mm) and ratios. Body parts (N = 8): BL ≈ 2.35–2.87; AL, 0.79–0.88; HW, 0.53–0.59; PL, 0.57–0.64; PW, 0.9–0.99; EL, 0.46–0.52; EW, 0.91–1.04; HTL, 0.6–0.74; PW/PL, 1.56–1.66; AL/PL, 1.35–1.46; HTL/PL, 1.04–1.22.

Differences between sexes: HTL (male, N = 4), 0.69–0.74; HTL (female, N = 4), 0.6–0.66; HTL/PL (male, N = 4), 1.09–1.22; HTL/PL (female, N = 4), 1.04–1.09.

Distribution. Japan (Kii peninsula, Honshu) (Fig. 18).

Symbiotic hosts. *Lasius fuliginosus* species group: *Lasius spathepus*.

Bionomics. *Homoeusa brevitarsis* sp. nov. was collected from foraging trails of host ants on the forest floor from May to July. No individual was collected using FIT. Their behavior with the host ants is unknown.

Remarks. Although several hundred *Homoeusa* specimens collected from colonies of the *Lasius fuliginosus* species group were examined in this study, this new species is only known from the Kii Peninsula, suggesting a restricted distribution.

Etymology. The specific name is derived from the Latin adjective, which means "short footed" and refers to the short tarsi of this new species.

Discussion

Host association

The association of *Homoeusa* species with the *Lasius umbratus* species group is documented for the first time in this study. *Lasius umbratus* and *L. meridionalis* typically forage underground (Seifert 1988), making it difficult to comprehensively survey their myrmecophilous guests. However, as described in the materials and methods, baiting along ant foraging trails proved to be an effective

method for efficiently collecting these guests. These discoveries suggest the possibility of undiscovered *Homoeusa* species associated with these ants, not only in Japan but also in other regions. The pale coloration of *H. gigantea* sp. nov. aligns with this observation and is consistent with the general trend seen in other subterranean beetles, which often exhibit reduced pigmentation as an adaptation to low-light environments. A similar case in the New World is *Decusa expansa* LeConte, 1866, which is associated with the yellowish *Lasius* species, *L. claviger* (Schwarz 1890). These examples may support the proposed association between *H. translucida* and *L. meridionalis*.

Dispersal behavior

The flight intercept trap (FIT) has proven to be an effective method for collecting these beetles, particularly *H. prolongata* and *H. gigantea* sp. nov. Similarly, many individuals of *Homoeusa* relatives associated with the *Lasius niger* group, such as *Aspidobactrus semirbiculatus* Maruyama, 2000 and *A. toyodai* Maruyama, 2000, were collected using FIT (Arai 2005). Interestingly, species associated with the *Lasius fuliginosus* group were rarely collected by this method (e.g., only two *H. rufescens*, one *H. ovata* in Nozaki and Maruyama 2022a, and two *H. japonica*). Species that are occasionally collected by FIT seem to share similar microhabitats, such as the interior of *L. niger* group nests or the subterranean foraging trails of the *L. umbratus* group. In contrast, species associated with the *L. fuliginosus* group tend to inhabit relatively open environments, staying close to their foraging trails on the forest floor. Although the dispersal behavior of *Homoeusa* adults remains unknown, their flight activity may be influenced by habitat differences.

Life history

The complete life cycle of *Homoeusa* remains a mystery due to the limited available data. The active period of adults generally spans from spring to early summer, but this range may be broader and extend later at higher latitudes or altitudes. *H. acuminata* Märkel, 1842, which is associated with *L. fuliginosus* (Latreille, 1798), has been observed from May to September in southwestern Belgium (Quinet and Pasteels 1995). Outside this period, adults are rarely found near *Lasius* nests, with only a few exceptions. Despite the large numbers of adult beetles observed during their active season – particularly in species associated with the *L. fuliginosus* group, such as *H. ovata* (Nozaki and Maruyama 2022a) – no larvae have been recorded. This suggests that larvae may reside deep inside the ant nests and depend on host resources. They may pupate in cryptic places and stay there during the teneral period for a while after emergence because teneral adults are nearly absent on the forest floor.

Interactions with the host ants

Responses to host ant workers vary across *Homoeusa* species and include behaviors such as ceasing movement, exposing the tip of the abdomen, grooming the ants, engaging in trophallaxis with workers, and rubbing their abdomen against the ants. These behavioral strategies likely function to mitigate host aggression. In this context, the variation in responses may be explained by factors such as body size and chemical strategies. Species that are significantly smaller than their host ants, such as *H. ovata* and *H. rufescens*, simply stop moving when confronted by their hosts. Small-sized symbionts are often overlooked by their hosts and may minimize detection risk by remaining motionless (von Beeren et al. 2021). In contrast, larger species like *H. japonica* and *H. longicornis* raise their abdomens when interacting with their hosts. This behavior resembles the "appeasement" strategy observed in *Dinarda dentata* (Gravenhorst, 1806), in which individuals are thought to release volatile chemicals from exocrine glands to reduce host aggression (Hölldobler and Kwapich 2019). Due to their large size, these beetles may not be able to evade detection simply by ceasing movement, necessitating the use of chemical defenses.

Chemical mimicry

Ant colonies primarily rely on cuticular hydrocarbons (CHCs) for nestmate recognition, as these compounds serve as species- and colony-specific chemical signatures (Lenoir et al. 2009). *Homoeusa laevigata* appears to exploit this system by mimicking nestmate behaviors such as licking the ants' bodies and soliciting food, which may facilitate their acceptance within the colony. So far, grooming and trophallaxis behaviors have been observed exclusively in *H. laevigata* among *Homoeusa* species. These behaviors are presumed to aid in chemical mimicry by acquiring CHCs from their hosts, similar to the mechanism proposed for the ant cricket *Myrmecophilus albicinctus* Chopard, 1924 (Komatsu et al. 2009). The rubbing behavior exhibited by *H. gigantea* sp. nov. remains difficult to interpret. This behavior may represent another means of acquiring CHCs, but further investigation is required.

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

Funding

This study was supported in part by a JSPS KAKENHI Grant Number JP22770085, JP23KJ1740.

Author contributions

Conceptualization: TN, MM. Data curation: TN. Funding acquisition: MM, TN. Resources: MM, TN. Supervision: MM. Visualization: TN. Writing – original draft: TN, MM. Writing – review and editing: TN, MM.

Data availability

All data that support the findings of this study are available in the main text.

Acknowledgements

We are deeply grateful to all collectors for kindly offering the specimens and Hirofumi Fujimoto, Fuminori Ito, Yuki Kamite, Kyoichi Kinomura, Takato Kobayashi, Takasuke Miyata, Toshie Miyata, Kôji Mizota, Takeyuki Nakamura, Tomoko Okamoto, Jun Soma, Kohei Suzuki, among others for helping us in the field surveys. We are deeply appreciative of Taku Shimada, Takuto Hashizume and Naoya Nakaya for kindly allowing the use of photographs of living individuals. We would like to show our great appreciation to Roger Booth, Tadashi Ishikawa, Toshio Kishimoto, Keita Matsumoto, Hirofumi Moriya, Harald Schillhammer, Michael Schülke, Yasutoshi Shibata, Matthias Seidel, Shusuke Shimamoto, Shuji Watanabe, Takeo Yamauchi, and Hiroyuki Yoshitomi for kindly lending specimens or helping us obtain specimens deposited in each institution/private collection. We also greatly appreciate Kazuo Ichikawa for his financial support for our research. We would like to thank Editage (www.editage.jp) for English language editing. Finally, we express our gratitude to reviewers, Jan Klimaszewski and Quiyari Santiago-Jiménez for their helpful comments on the manuscript. Museum für Naturkunde (Berlin) waived the publication costs of this article.

References

Arai K (2005) Two *Aspidobactrus* species (Staphylinidae, Aleocharinae) obtained by flight interception traps. The Newsletter of the Staphylinidological Society of Japan (26): 6. [in Japanese with English title]

Bernhauer M, Scheerpeltz O (1926) Staphylinidae VI. (Pars 82). In: Junk W, Schenkling S (Eds) Coleopterorum Catalogus Vol.5. W. Junk, Berlin, 499–988.

Bolton B (1995) The New General Catalogue of the Ants of the World. Harvard University Press, London, 504 pp.

Bondroit J (1920) Notes diverses sur des fourmis d'Europe. Annales de la Société Entomologique de Belgique 59: 143–158.

Boudinot BE, Borowiec ML, Prebus MM (2022) Phylogeny, evolution, and classification of the ant genus Lasius, the tribe Lasiini and the subfamily Formicinae (Hymenoptera: Formicidae). Systematic Entomology 47(1): 113–151. https://doi.org/10.1111/syen.12522

Casey TL (1893) Coleopterological notices V. Annals of the New York Academy of Sciences 7(1): 129–606. https://doi.org/10.1111/j.1749-6632.1893.tb55411.x

Casey TL (1900) Review of the American Corylophidæ, Cryptophagidæ, Tritomidæ and Dermestidæ, with other studies. Journal of the New York Entomological Society 8: 51–172.

Collingwood CA (1979) The Formicidae (Hymenoptera) of Fennoscandia and Denmark. Fauna Entomologica Scandinavica 8: 1–174. https://doi.org/10.1163/9789004273337

Donisthorpe H (1927) British Ants, their Life History and Classification (2nd edn.). London: G. Routledge and Sons, xvi + 436 pp.

Fabricius JC (1804) Systema Piezatorum Secundum Ordines, Genera, Species, Adjectis Synonymis, Locis, Observationibus, Descriptionibus. Brunswick: C. Reichard, xiv + 15–439 + 30 pp. https://doi.org/10.5962/bhl.title.10490

Fenyes A (1919) Coleoptera. Fam. Staphylinidae. Subfam. Aleocharinae. In: Wytsman P (Ed.), Genera Insectorum. Louis Desmet-Verteneuil, Brussels, 1–453.

Forel A (1912) Formicides neotropiques. Part VI. 5me sous-famille Camponotinae Forel. Mémoires de la Société Entomologique de Belgique 20: 59–92. https://doi.org/10.5962/bhl.part.19251

Hölldobler B, Kwapich CL (2019) Behavior and exocrine glands in the myrmecophilous beetle *Dinarda dentata* (Gravenhorst, 1806) (Coleoptera: Staphylinidae: Aleocharinae). PLoS One 14(1): e0210524–e22. https://doi.org/10.1371/journal.pone.0210524

Karavaiev V (1912) Ameisen aus dem paläarktischen Faunengebiete. Russkoe Entomologicheskoe Obozrenie 12: 581–596.

Komatsu T, Maruyama M, Itino T (2009) Behavioral differences between two ant cricket species in Nansei Islands: Host-specialist versus host-generalist. Insectes Sociaux 56: 389–396. https://doi.org/10.1007/s00040-009-0036-y

Kraatz G (1856) Naturgeschichte der Insekten Deutschlands. Abteilung 1. Coleoptera. Vol. 2. Staphylinii. Lief. 1–2. Nicolaische Buchhandlung, Berlin, vii + 376 pp.

LeConte JL (1866) Additions to the coleopterous fauna of the United States. No. 1. Proceedings. Academy of Natural Sciences of Philadelphia 1866: 361–394.

Lenoir A, Depickère S, Devers S, Christidès JP, Detrain C (2009) Hydrocarbons in the ant *Lasius niger*: From the cuticle to the nest and home range marking. Journal of Chemical Ecology 35: 913–921. https://doi.org/10.1007/s10886-009-9669-6

Märkel F (1842) Anfrage und Bitte. Entomologische Zeitung 3: 142–144.

Maruyama M (2004) A permanent slide pinned under a specimen. Elytra 32(2): 276.

Maruyama M (2006) Revision of the Palearctic species of the myrmecophilous genus *Pella* (Coleoptera, Staphylinidae, Aleocharinae). National Science Monographs 32: 1–207.

Maruyama M, Zerche L (2014) Japanese species of myrmecophilous genus *Thiasophila*. Esakia 54: 17–25. https://doi.org/10.5109/1516263

Maruyama M, Komatsu T, Kudo S, Shimada T, Kinomura K (2013) The Guests of Japanese Ants. Tokai University Press, Kanagawa, xii + 208 pp.

Mulsant E, Rey C (1873) Description de divers coléoptères brévipennes nouveaux ou peu connus. Opuscules Entomologiques 15: 147–189.

Nishida M (2019) Beetles and their changes in the number of beetles obtained from FITs installed in two terrestrial forests in western Saga Prefecture, Japan, in 2018. KORASANA 91: 125–144. [in Japanese]

Nozaki T, Maruyama M (2022a) Taxonomy of *Homoeusa* Kraatz, 1856 (Coleoptera, Staphylinidae) from the East Palearctic: I. *Homoeusa rufescens* (Sharp, 1874) and a new allied species. ZooKeys 1121: 39–58. https://doi.org/10.3897/zookeys.1121.85489

Nozaki T, Maruyama M (2022b) Corrigendum: Nozaki T, Maruyama M (2022) Taxonomy of *Homoeusa* Kraatz, 1856 (Coleoptera, Staphylinidae) from the East Palearctic: I. *Homoeusa rufescens* (Sharp, 1874) and a new allied species. ZooKeys 1121: 39–58. https://doi.org/10.3897/zookeys.1121.85489. ZooKeys 1125: 207–208. https://doi.org/10.3897/zookeys.1125.94925

Nylander W (1846) Additamentum adnotationum in monographiam formicarum borealium Europae. Acta Societatis Scientiarum Fennicae 2: 1041–1062.

Quinet Y, Pasteels JM (1995) Trail following and stowaway behaviour of the myrmecophilous staphylinid beetle, *Homoeusa acuminata*, during foraging trips of its host *Lasius fuliginosus* (Hymenoptera: Formicidae). Insectes Sociaux 42(1): 31–44. https://doi.org/10.1007/BF01245697

Radchenko A (2005) A review of the ants of the genus *Lasius* Fabricius, 1804, subgenus *Dendrolasius* Ruzsky, 1912 (Hymenoptera: Formicidae) from East Palaearctic. Annales Zoologici 55: 83–94.

Ruzsky M (1912) Mirmekologische zametki. Uchenye Zapiski Kazanskago Vetrinarago Instituta 29: 629–636.

Saitoh O, Nakayama K, Horii K (2017) Beetle fauna around Yakunimi-yama, Hadano City, Kanagawa Prefecture (1). Kanagawachûhô 193: 1–52. [in Japanese]

Santschi F (1941) Quelques fourmis japonaises inédites. Mitteilungen der Schweizerische Entomologische Gesellschaft 18: 273–279.

Sawada K (1970a) Aleocharinae (Staphylinidae, Coleoptera) of the IBP-Station in the Shiga Heights, central Japan (I). Bulletin of the National Science Museum 13(1): 23–64.

Sawada K (1970b) Aleocharinae (Staphylinidae, Coleoptera) of the IBP-Station in the Shiga Heights, central Japan, II. Contributions from the Biological Laboratory Kyoto University 23: 33–60.

Schülke M, Smetana A (2015) Staphylinidae Latreille, 1802. In: Löbl I, Löbl D (Eds) Catalogue of Palaearctic Coleoptera. Volume 2/1–2. Revised and updated edition. Hydrophiloideae Staphylinoidea. Brill, Leiden, 304–1134.

Schwarz EA (1890) Myrmecophilous Coleoptera found in temperate North America. Proceedings of the Entomological Society of Washington 1: 237–247.

Seifert B (1988) A revision of the European species of the ant subgenus *Chthonolasius* (Insecta, Hymenoptera, Formicidae). Entomologische Abhandlungen. Staatliches Museum für Tierkunde Dresden 51: 143–180.

Sharp D (1874) I. The Staphylinidae of Japan. Transactions of the Royal Entomological Society of London 22(1): 1–103. https://doi.org/10.1111/j.1365-2311.1874.tb00159.x

Sharp D (1888) The Staphylinidae of Japan. Annals & Magazine of Natural History 2(6): 277–295. https://doi.org/10.1080/00222938809460928

Smetana A (2004) Subfamily Aleocharinae Fleming, 1821. In: Löbl I, Smetana A (Eds) Catalogue of Palaearctic Coleoptera. Vol. 2. Hydrophiloidea-Histeroidea, Staphylinoidea. Apollo Books, Stenstrup, 353–494. https://doi.org/10.1603/008.104.0301

Thomson CG (1859) Skandinaviens Coleoptera, Synoptiskt Bearbetade. Tom 1. Lund: Berlingska Boktryckeriet, v + 290 pp. https://doi.org/10.5962/bhl.title.138677

von Beeren C, Brückner A, Hoenle PO, Ospina-Jara B, Kronauer DJC, Blüthgen N (2021) Multiple phenotypic traits as triggers of host attacks towards ant symbionts: Body size, morphological gestalt, and chemical mimicry accuracy. Frontiers in Zoology 18: 46. https://doi.org/10.1186/s12983-021-00427-8

Wheeler WM (1910) An aberrant *Lasius* from Japan. Biological Bulletin (Woods Hole) 19: 130–137. https://doi.org/10.2307/1536181

Wilson EO (1955) A monographic revision of the ant genus *Lasius*. Bulletin of the Museum of Comparative Zoology 113: 1–201.

Yamauchi K (1979) Taxonomical and ecological studies on the ant genus *Lasius* in Japan (Hymenoptera: Formicidae). I. Taxonomy. Science Report of the Faculty of Education Gifu University 6: 147–181. [Natural Science]

Yamauchi K, Hayashida K (1970) Taxonomic studies on the genus *Lasius* in Hokkaido, with ethological and ecological notes (Formicidae, Hymenoptera). II. The subgenus *Lasius*. Journal of the Faculty of Science, Hokkaido University. Series VI. Zoology: Analysis of Complex Systems, ZACS 17: 501–519.